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The Journal
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VOLUME 11 JUNE, 1946 NUMBER 2

State Certification of Speech Correctionists

James A. Carrell*

THIS PAPER undertakes to analyze and present a summary of the requirements for certification of speech correction teachers in the various states. No effort is made to include data on such provisions, where they exist, for the teachers of the deaf or hard of hearing.

The compilation of information on current standards for speech correction teachers laid down by school authorities on the state level grew partly out of an effort to formulate such standards for the State of Washington, which intends to set up licenses for special teachers of this type.

A second and broader reason, however, was the conviction that we must continue to be actively engaged in raising professional standards. Enormous progress has been made, but any realistic person knows that an uncounted number of insufficiently prepared persons still are teaching speech correction in our public schools.

How may reasonable minimum standards be enforced? Teacher certification would appear to be the only practical answer. The matter might be accomplished by the passage of uniform laws in the various states, comparable to those governing other professions, but this does not seem likely to occur in the foreseeable future. Moreover, this would be a needlessly cumbersome process, since the certification regulations of the state departments of education have all the legal force necessary.

Certainly the position of the American Speech Correction Association on the minimum training and experience a speech correction teacher needs is made clear in our criteria for the various classes of membership in the Association. An analysis of the way in which present practices in certification compare with the membership requirements of the Association should help in formulating the problem of what remains to be done.

A professional group of this sort can work only through the medium of education—which is a collective and individual responsibility of its members. In the correspondence which was necessary to gather the information for this paper, two very encouraging trends could be noted. First, a large number of the state officials expressed interest in certification of speech correction teachers. Many said they realized such a certificate was desirable, and the tenor of their remarks suggested a genuine interest and concern. Others spoke of revis-

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ing their present requirements upward. Second, the certificates now in force in many states show clearly the influence of the standards which the Association has set up for its clinical and professional members. It seems reasonable to infer that state school administrators would be grateful for and would accept further guidance from this organization.

The specific objective of this paper is solely to compile information on the nature of the special certification requirements as they now exist. No effort will be made to suggest desirable minimum requirements or to offer advice on how we might proceed in getting such requirements adopted.

Data for the survey were collected by direct correspondence with the departments of education in the various states. Information was first gathered more than a year ago[1] and a second letter inquiring about possible changes since that time was circulated this fall (1945). Between the two series of letters, replies were received from every state. Eleven states failed to answer this fall, but only in the case of Indiana is there any reason to believe pertinent data may be missing, since none of the others is known to have laws governing this type of remedial education. A second possible source of error might be, of course, differences in the interpretation of regulations or in other procedures which were not made clear to us in the replies.

It is obvious, of course, that in the case of individual school systems and particularly in areas where there are strong teacher training institutions, the level of preparation of teachers may go far beyond anything actually required by the state school code. The general quality of the preparation and teaching may be very high even where no speech correction certificate is necessary. These are matters which do not come within the scope of this paper, but the comment is made to emphasize that our intention is to report on existing regulations, not to infer that professional standards are necessarily low where some regulation does not exist.

TWENTY-SIX states and the District of Columbia have statutes relating to the education of children with defects of speech. In a majority of the laws, the speech defective is mentioned specifically, but in a limited number of cases he is brought under the category of 'crippled' or 'handicapped' child by the manner in which the state school officials have interpreted the measures.

States having such laws are Illinois, Maine, California, Wyoming, Texas, Louisiana, New Jersey, Oklahoma, Missouri, Oregon, Ohio, Connecticut, Pennsylvania, Washington, Florida, Kentucky, Wisconsin, Delaware, Minnesota, Iowa, Kansas, Nebraska, New York, Virginia, Maryland, and West Virginia.

It might be interesting to interpolate a brief remark on the provisions of these laws. They vary widely, of course. Some do no more than give individual school districts permission to employ remedial teachers. Others subsidize the instruction by state funds up to a maximum of approximately $2,400 per year (Washington) for each teacher. A complete analysis of the laws is under way and will perhaps be published later. A large proportion of the measures have been passed within the last ten years.

Of the states regulating remedial education, fifteen—plus the District of Columbia—have special certificates for speech correction teachers. Two more states, Ohio and Delaware, report they have worked out tentative certification requirements. The New York State Board of Education has indicated that it will include a speech

[1]This paper was received in the editorial office January 24, 1946.

correction certificate in its next bulletin on certification, but no further details were supplied. In effect, therefore, eighteen states and the District of Columbia make provision for special speech correction certificates. This would leave eight states with remedial laws relating to speech correction, but no specification for teachers employed under such legislation.

LET US FIRST examine the number of credit hours required for specific professional preparation. By this is meant courses in phonetics, anatomy of the speech organs, physiology of speech, physics of sound and speech, psychology and neurology of speech, speech pathology, speech correction and therapy, research, seminar and thesis credits, and clinical and laboratory courses in the foregoing, as described in the membership regulations of the Association.

In analysis of the following data the proposed Ohio certificate of the lowest grade and the tentative Delaware requirements are included. Where the requirements were stated in numbers of courses, rather than credit hours, each course was counted as four credits (which might weight the averages upward slightly). One state, Wisconsin, replied that a speech major at the University, or 30 semester hours elsewhere evaluated in comparison with such a major, was necessary. Since it was not clear that all thirty of such hours must necessarily fall in the previously mentioned category of courses, this figure was not included. Its inclusion would, of course, raise the average. Henceforth, all figures used to refer to courses or credits will be in terms of semester hours.

In the District of Columbia and the fifteen states which could be evaluated, the average number of hours necessary in specific professional preparation is slightly greater than 12. Other measures of central tendency provide no significantly different information. The mode group, including four states, is likewise 12.

The range in the number of hours required by the various states is quite wide. Oklahoma and New Jersey, each of which requires 4 hours, stand at the lower end of the scale. It should be noted parenthetically that the New Jersey certificate appears intended to cover the general category 'speech,' although we were given the impression it was used to cover the remedial teacher. Next were the District of Columbia and Texas, each requiring two courses, which we evaluated as 8 hours. It is true, of course, that the actual number of hours in the two courses which would permit certification under this phrasing might reasonably range from as few as 4 to as many as 10. The Missouri bulletin in 1943 stated only that 'special preparation' is needed and their reply this fall indicated no change had been made.

At the other extreme are Pennsylvania and Delaware, which demand 18 hours; Michigan, 16; and Illinois and Iowa, 15. Requirements in the remaining states are Oregon and Minnesota, 14; and Connecticut, California, Florida, and Virginia, 12.

A special word must be said about the tentative Ohio plan for certification of speech and hearing therapists. It is by far the most detailed and comprehensive adopted or under consideration by any of the states. Three grades of certificates are envisaged, the four-year provisional, the eight-year professional, and the permanent certificates. Briefly, so far as hour requirements are concerned, the provisions are as follows: (1) The four-year provisional certificate demands 36 hours of professional preparation in special education, not all of which need be in the general professional category as described by the Association regulations. Incidentally, in including the tentative Ohio certificate

in computing averages, we assumed 24 hours would normally be in this category in order to arrive at what seemed to be a reasonable figure. (2) The eight-year professional certificate requires 18 additional hours of approved graduate study and has further experience criteria. (3) The permanent certificate may be granted upon completion of an M. A. or Ph. D. degree in speech and hearing therapy plus an additional clinical experience requirement.

IN ADDITION to the number of hours of specific professional preparation in courses needed for certification in the various states, certain other aspects of the regulations are interesting. Possibly the most important of these is the matter of practice teaching or clinical practice. In only 8 cases is any specific requirement laid down, either in terms of credit for practice teaching or in clock hours of clinical practice.

Those states describing such a requirement in terms of credits or courses are New Jersey, 2 hours; Michigan, 4 hours; California, 4 hours (or two years' experience); and Minnesota, 6 hours. States expressing the requirement in terms of clock hours are Illinois, 150 hours; Virginia, 120 hours, and Oregon, 100 hours. In Ohio the provisional certificate as now outlined would require 200 hours, the professional certificate completion of 24 months of successful experience in the field, and the permanent certificate 40 months of successful experience under the eight-year professional certificate. Delaware plans to require six months experience.

Some states, such as Pennsylvania and others, clearly expect the teachers to have had clinical practice, although no specific amount is stipulated. In Wisconsin, where a major is made the basis for certification, the requirement would be determined by the institution in question. Certain other states make no reference whatsoever to practice teaching or clinical practice.

Another aspect of the certification standards relates to professional preparation in allied fields, such as those included in the membership criteria outlined for the Association. The states calling for such study and the amount demanded are Michigan, 14 hours; Ohio, at least 12 hours (and the normal program would probably include many more); Oregon, 10 hours; Illinois, 9 hours; Virginia, 8 hours; Pennsylvania, 6 hours; Texas, 1 course; and Wisconsin, as provided in the speech major.

A further noteworthy point about present certification practices — and the one on which there is apparently the greatest agreement — is that all but three states having speech correction certificates also require the candidate to meet the criteria for a regular certificate. The exceptions are Missouri, Wisconsin, and the proposed Ohio license. This does not necessarily entail study beyond the B. A. degree, of course, since the special courses may be planned as an undergraduate major so long as the number of hours necessary does not go beyond what it now is. In addition, a few states advise that experience with the normal child is desirable, and one state, Oregon, requires one year of such teaching. So far as the data available could be interpreted, a Bachelor's degree or its equivalent is necessary in all cases.

One final observation might be of some practical interest. A number of states which have recently instituted speech correction certificates make special allowances for teachers already employed in remedial positions. In one or two instances, all such persons became automatically eligible for the speech correction license. Others grant temporary credentials, renewable a limited number of times so that the teacher with insufficient course

preparation can remedy his deficiency. In other cases, as in Oregon, teaching experience is allowed as a substitute for credit hours, up to a stated maximum. The purpose of these exceptions is evident as, for a time, is their necessity. A few states have made a concession to the manpower shortage by providing emergency certificates, to be issued at the discretion usually of the state department of education.

POSSIBLY THE briefest and most meaningful way to summarize and evaluate current certification practices in the states would be to place them beside the credit and experience requirements for professional and clinical membership in the Association, bearing in mind, of course, that in thirty states no special certificate is necessary for the speech correction teacher.

A professional member is defined as an individual who has completed a broad education in the field, has had considerable experience, and is fully equipped professionally. By inference, he is prepared to study and train defective students without guidance from a better trained speech correctionist. Forty-two semester hours of specific preparation, 12 hours in an allied field, 4 years experience, and an M. A. degree are required. In no case, excepting the proposed Ohio professional certificate, would a public school teacher be expected under present regulations to approach these criteria. The average speech teacher, even in a school system of substantial size, usually has to work with a minimum of supervision, or with none at all. Therefore, it is possible that our Association regulations mean clearly that such teachers should have the qualifications of professional members if we are to approve of what they are doing. Certainly current minimum requirements for certification do not even come close to this level.

A clinical member, who has a minimum of experience and academic preparation and is capable of doing speech corrective work under guidance, must have a minimum of 18 hours of credit in specific professional courses, 12 hours in allied fields, 200 clock hours of clinical practice, and one additional year of experience. The comparison of these criteria with the certification requirements is possibly more significant.

On the matter of hours, only one state certificate, Pennsylvania (two if Wisconsin is included), and two proposed certificates, in Ohio and Delaware, would satisfy the requirement of 18 hours. In no states, excepting possibly Wisconsin, Ohio, California, Michigan, and Minnesota, would it be certain that the candidate had acquired the minimum amount of practice teaching and experience needed for clinical membership.

This conclusion, then, is inescapable: as they now stand, present certification practices fall far short, so far as minimum requirements are concerned, of what the Association has set up as the desirable minimum training and experience for the speech correction teacher.

FORMAL CALL FOR PAPERS

American Speech Correction Association

1946 ANNUAL CONVENTION—DECEMBER 30, 31, 1946, JANUARY 1, 1947

The Program Committee will receive for examination from now until the deadline, August 1, abstracts of papers and addresses proposed for a place on the program of the 1946 meeting of the Association. Three general types of papers will be considered:

1. Technical and scientific papers on speech pathology and speech correction.

2. Papers dealing with inter-connections between speech correction and related fields.

3. Evaluations of the status of the speech correction profession and its prospects for the future.

The Committee will operate under the rules set down in the Constitution of the Association.

All abstracts must be received by the Committee by August 1, 1946. In addition to summarizing the paper, each abstract must indicate (a) the time required for presentation, (b) details on the type of visual or audio aids which will be needed, and (c) other requirements. The full name and the professional affiliation of the author should be indicated.

Receipt of an abstract will be taken as evidence that the person submitting it is aware of the following rules governing the conduct of section meetings.

1. All meetings will begin when scheduled.

2. Chairmen will, without exception, hold speakers to time limits on papers, addresses and discussions.

3. As in the past, copies of all papers and addresses are to be collected by chairmen of section meetings, who will submit these manuscripts to the Editor of the *Journal of Speech Disorders.*

The Committee will welcome suggestions from members regarding non-members who can contribute significantly to the program. Such recommendations are to be transmitted to the Committee through a Fellow of the Association.

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Speech Reception in Relation To Pattern of Pure Tone Loss

Raymond Carhart*

A PREVIOUS study based on heterogeneous groups of patients revealed a close relationship between hearing acuity as measured by speech reception for Harvard bi-syllabic word lists and as recorded by 'better ear' average for 512-2048 cycles per second (c. p. s.) (2). Roughly speaking, the loss according to the pure tone average was found to equal the loss according to the speech reception score. In predicting on individual cases, however, a wide margin of uncertainty appeared. It is therefore pertinent to search for factors which may be responsible for individual variations from the general trend of the previous study. Since no attempt was made in the original study to segregate patients according to pattern of pure tone loss, the question arises: *Does the relationship between loss for speech reception and loss for pure tones vary with the contour of the audiometric curve?* The following paper reports a statistical investigation of this question.

Preliminary orientation to the problem is given by Hughson and Thompson (4). These authors compared discrete frequency audiograms with thresholds for speech reception as measured with the Bell Telephone Intelligibility Lists. They divided their subjects into two groups: (1) those having flat audiometric curves and (2) those having more marked loss for high tones. Hughson and Thompson (4) conclude '. . . . . the speech reception levels for the two groups show a completely insignificant difference from any practical standpoint'. They further state that 128 c. p. s., 256 c. p. s. and 8192 c.p.s. are of little significance " . . . . in relation to the all-important problem of speech reception." Finally, they conclude that bone conduction measures and nerve deafness seem relatively unrelated to ability in perceiving intelligibility lists at threshold levels.

These findings are thought provoking. They make it desirable to repeat the investigation with a more extensive breakdown of audiometric patterns and with other materials for testing speech reception.

Procedure

THE DATA FOR the present study were selected from the clinical files of the Aural Rehabilitation Service of Deshon General Hospital. Thus, these data represent findings obtained during routine testing of patients undergoing aural rehabilitation. Speech reception thresholds were obtained binaurally with Harvard bi-syllabic lists presented by live-voice (3). Discrete frequency thresholds were measured, by the ascending method, with commercial audiometers. Both types of threshold were routinely obtained within the same hour.

Five experimental groups and a control group were selected on the basis of pattern of audiometric curve. To select these groups, five distinctive categories were chosen and the files were then culled for good examples of each category. Only tests

*Raymond Carhart (Ph.D., Northwestern) served, during the war, on leave from Northwestern University, with the rank of Captain, as Acoustic Physicist, Deshon General Hospital, Butler, Pennsylvania. Acknowledgment is due Miss Mary Schmitz for conducting statistical studies incorporated in this paper.

given between November, 1944, and May, 1945, were included. Except for the requirement that the audiogram be of a particular type, the basis of selection was random. Thus, each group encompassed wide ranges in hearing loss, intelligence, language ability, and military rank. The subjects were all adult males, but they ranged from early manhood to middle age. Medical diagnosis, too, was ignored and may be considered random within the limits which are possible when groups are segregrated according to contour of loss.

As mentioned, audiometric categories were chosen so as to yield five experimental groups each of which was characterized by a pattern of loss definitely dissimilar to that of any other group. Classification was made on the basis of air conduction curves only. The five audiometric categories (**1**) were as follows:

Group 1: 50 cases having flat audiograms characterized by equal loss for all test frequencies.

Group 2: 50 cases having gradual high tone loss characterized by a progressively greater impairment for higher frequencies at a slope of 5 to 10 decibels per octave.

Group 3: 32 cases having marked high tone loss characterized by progressively greater impairment for higher frequencies at a slope of 15 to 20 decibels per octave.

Group 4: 50 cases having notched audiogram characterized by flat or gradual high tone loss to 2048 c.p.s. and a sharp increased loss (notched) beyond 2048 c.p.s. (43 were flat with notch and 7 gradual with notch).

Group 5: 50 cases having atypical audiograms characterized by irregularities and curve shapes which definitely precluded inclusion in any major category in the classification system being employed.

Special precautions were taken in selecting the cases to be included in the experimental groups. Each audiogram had to be a good example of its type. Thus, in the first three groups, no single point could deviate more than 10 decibels from the 'curve of best fit.' Furthermore, the arithmetic total of deviations from the 'curve of best fit' could not exceed 20 decibels. The same rules applied to the unnotched portion of the audiograms comprising Group 4. Care was taken to see that the fifth group did not include poor examples of the first three classes nor notched audiograms in which the break occurred at some frequency other than 2048 c.p.s. Rather, Group 5 consisted of diverse patterns calling for classification quite distinctive from those of the first four groups. Group 5 was included in the study primarily as a check. It gave the study a fuller sampling of audiometric types but was not homogeneous in the sense that each of the other groups was.

A sixth group was included in the study as a control. It contained 100 cases selected completely at random. Subsequent tabulations of the audiogram types which were included showed that 86 cases were classifiable in one of the first four groups, although not all were good examples of their respective types. The remaining 14 cases had atypical audiograms conforming to the definition for Group 5.

A seventh group is reported in the study, but this group does not include additional patients. Instead, it was formed by combining the 182 cases from Groups 1 through 4. As such, it it a composite group including various audiometric patterns but not containing either poor samples of these patterns or atypical curves.

In treating the data for the various groups, two statistical methods were used.

First, the relation between pure tone thresholds and speech reception thresholds for different audiometic types was assessed by determining (1) interdependence of thresholds as revealed by coefficients of correlation, (2) numerical correspondence of thresholds as revealed by group means and standard deviations, and (3) predictive relations as revealed by regression equations. In this first stage of the statistical treatment, two criteria of pure tone threshold were used: (1) 'better ear' average for 512-2048 c.p.s.,[1] and (2) percentage of hearing loss computed according to the AMA method (**5**). These two criteria were in-

[1] 'Better ear' here means that only the best threshold at each of the three test frequencies was employed. Where the two ears had interweaving curves, each ear contributed the thresholds on which it was superior.

Because of the specifications by which the various groups were selected, 'better ear' did not signify the same thing for all groups. For all groups except 5 and 6, the 'better ear' average was usually computed on thresholds for a single ear. This occurred because selection criteria yielded cases for whom the two air conduction curves did not interweave. By contrast, groups 5 and 6 contained many cases where interweaving occurred. In these latter cases 'better ear' average included thresholds from both ears.

dependently correlated with the binaural threshold for speech reception. Speech reception scores and the average for 512-2048 c.p.s. were recorded in decibels of hearing loss with the normal threshold as the reference point. AMA scores were recorded in percentage of hearing loss.

The second statistical treatment involved differences between speech reception and pure tone thresholds. A 'difference score' was obtained for each patient by arbitrarily subtracting his 'better ear' average for 512-2048 c.p.s. from his speech reception threshold. (AMA percentage scores were not employed at this stage.) Such a process of computing difference scores abstracted the discrepancy between acuity for pure tones and acuity for speech stimuli from the general level of loss. The experimental groups were then compared, in terms of *relative acuity* for the two types of test, by subjecting their difference scores to an analysis of variance.

The following section reports the results of the statistical analyses just described and interprets these results in terms of three specific questions. First, does the interdependence between pure tone loss and speech reception loss vary from one audiometric pattern to another? Second (as a pertinent digression on which the present data yield information), is it more useful to compare speech reception thresholds with 512-2048 c. p. s. averages or with AMA percentage scores? Third, are there systematic differences from one audiometric contour to another in the relative acuity for pure tones and for speech reception stimuli?

Results and Interpretations

A. Dependence of relation between pure tone loss and speech reception score upon audiometric contour

Table 1 reports coefficients of correlation between speech reception thresholds and pure tone thresholds. These correlations were obtained for the groups defined in the section on procedure. The reader will note that speech reception was compared with two pure tone criteria: (1) 'better ear' average for 512-2048 c. p. s., and (2) percentage of loss according to the AMA method. Several facts stand out immediately in Table 1. These facts throw light upon the degree to which the pattern of the audiometric curve affects the interdependence between pure tone measures and speech reception scores. They are:

1. All correlations are positive, indicating a definite interdependence between speech reception and pure tone loss. However, this interdependence varies somewhat with audiometric pattern.

2. With the possible exceptions of Group 3, there are no significant differences between the coefficients yielded by the pure tone average and by the AMA percentages. This fact is interpreted further in Section B.

3. Group 3 (marked high tone loss) is the only group showing low positive correlations between speech reception and the two pure tone

Table 1. Correlation between speech reception score (SR) and pure tone loss for groups representing different types of audiometric curve.

Groups: Pattern of Loss	*No Cases*	*Coefficients of Correlation*	
		SR vs Average for 512-2048 c. p. s.	*SR vs AMA Percentage of Loss*
1. Flat	50	.79 ± .05	.76 ± .06
2. Gradual high tone	50	.75 ± .06	.74 ± .06
3. Marked high tone	32	.29 ± .16	.49 ± .14
4. Notched beyond 2048 c. p. s.	50	.87 ± .03	.82 ± .05
5. Atypical, no major category	50	.74 ± .06	.80 ± .05
6. Unselected	100	.71 ± .05	.72 ± .05
7. Composite of Groups 1-4	182	.80 ± .03	.78 ± .03

criteria. Thus, when marked high tone loss is encountered, there is little point in predicting the probable score on one type of acuity measure from the other. Moreover, within this limitation, AMA percentage seems a more meaningful basis for comparison with speech reception score than does average loss for 512-2048 c. p. s. However, these interpretations must be accepted tentatively because of the small number of cases involved and the large standard errors for the coefficients under consideration.

4. Group 4 (notched at 2048 c.p.s.) shows the highest positive correlations. The correlation is particularly good (.87) between speech reception and pure tone average.

5. In general, Groups 1, 2, 4, and 5 have coefficients which are equivalet to one another and to the coefficients for Group 6 (100 unselected cases) and Group 7 (composite of Groups 1-4).

TWO GENERAL conclusions may be drawn from the foregoing facts, although their confirmation rests in part on information appearing on the following pages.

1. The high coefficients observed for Group 4, (notched beyond 2048 c. p. s.) indicate conclusively that thresholds for test tones 4096 c. p. s. and 8192 c. p. s. have little or no bearing upon speech reception thresholds as measured with the Harvard bi-syllabic words.

2. Within very wide limits the degree of relation between speech reception for Harvard bi-syllabic words and pure tone loss, as codified either by the 512-2048 c. p. s. average or by the AMA percentage, is independent of the audiometric pattern. Within the present study, only cases with marked high tone loss deviate from this conclusion.

The above conclusions apply to degree of interdependence. A second question involves the *numerical correspondence* between speech reception and pure tone scores. In other words, can one expect the same speech reception score to be associated with a particular pure tone average or a particular percentage loss regardless of audiometric pattern, or will the relative magnitude of speech reception loss depend partly on type of audiometric curve?

Data bearing on this question appear on Table 2. Again several facts stand out immediately.

1. Comparing results for a given type of measure, the numerical magnitude of the means varied from group to group. Thus, each group tended to be somewhat distinctive in the severities of the losses it encompassed. Losses were, on the average, least for Group 4 (notched beyond 2048 c. p. s.). In order of progressively greater loss the other groups aligned roughly as follows: Group 5 (atypical), Group 3 (marked high tone loss), Group 6 (unselected), Group 7 (composite of Groups 1-4), Group 1 (flat), and Group 2 (gradual high tone loss). These differences are probably the direct result of the selective factors operative in choosing cases for the various groups. For example, clean-cut examples of marked high frequency loss of necessity showed very good thresholds for low frequencies in order to fit their definition and still fall within the testing range for high frequencies. The end result was to eliminate from Group 3 those patients having very poor hearing in the low and middle frequency ranges. Other specific effects were probably operative to load Group 4 with light loss cases and Group 2 with heavy loss cases. Incidentally, Groups 1 and 5 agree quite closely with Groups 6 and 7.

2. Generally speaking, for a given group, the mean loss in speech reception is numerically very nearly equal to the 'better ear' average for 512-2048 c. p. s. This fact offers justifica-

TABLE 2. Central tendencies and variabilities of speech reception and pure tone scores as shown by the means and standard deviations of groups representing different types of audiometric curves. (Results are in decibels.)

Group: Pattern of Loss	No. Cases	Speech Reception		512-2048 c. p. s. Average		Percent Loss by AMA Method	
		Mean	S. D.	Mean	S. D.	Mean	S. D.
1. Flat	50	50.4	13.9	50.2	15.5	51.3	22.6
2. Gradual high tone	50	59.5	19.3	61.3	17.7	67.3	22.7
3. Marked high tone	32	42.4	11.3	48.8	12.1	49.3	15.9
4. Notched beyond 2048 c. p. s.	50	36.5	18.4	37.3	21.3	39.4	25.6
5. Atypical, no major category	50	46.4	14.4	45.6	14.3	45.4	18.6
6. Unselected	100	47.3	19.5	47.7	20.7	47.8	26.4
7. Composite of Groups 1-4	182	47.7	18.8	49.4	19.6	52.1	24.8

tion for comparing these two measures of hearing loss.

3. There is only one sharp exception to the foregoing generalization. For Group 3 (marked high tone loss) the mean for speech receptions is 42.4 decibels and the mean for pure tone average is 48.8 decibels. The significance of this discrepancy is discussed later (see Section C).

4. There is close correspondence between mean loss for speech reception and mean percentage of loss. This fact is more fortuitious than meaningful, as will also be explained later.

5. The standard deviations vary from group to group and from one criterion of loss to another. In general, within a given group, the standard deviation is least for speech reception and greatest for AMA percentage. Variations within a given test criterion, from one group to another, are probably functions of the selective factors mentioned above.

Two general conclusions may be drawn from the foregoing facts.

1. Except where high tone losses are involved, the numerical correspondence of the three means for a given group was sufficiently great so that the contour of the audiogram can probably be ignored when making numerical comparisons between speech reception and pure tone scores.

2. The variations among standard deviations did not reveal any systematic trends which suggest that dispersion of scores is fundamentally different from one audiometric pattern to another.

TABLE 3. Regression equations and standard errors of estimate on speech reception and pure tone scores for groups representing different audiometric patterns.

Group: Pattern of Loss	No. Cases	Speech Reception vs. 512-2048 c. p. s. Average			
		Equations for Predicting Speech Reception (SR')	S. E. of Est. in DB	Equation for Predicting Pure Tone Average (PT')	S. E. of Est. in DB
1. Flat	50	SR' = .71 PT +14.8	8.6	PT' = .88 SR + 5.8	9.6
2. Gradual high tone	50	SR' = .82 PT + 9.2	12.7	PT' = .69 SR +20.2	11.7
3. Marked high tone	32	SR' = .27 PT +29.2	10.8	PT' = .31 SR +35.7	11.6
4. Notched beyond 2048 c. p. s.	50	SR' = .75 PT + 8.5	9.0	PT' = 1.00 SR − .4	10.4
5. Atypical, no major category	50	SR' = .75 PT +12.2	9.6	PT' = .73 SR +11.7	9.6
6. Unselected	100	SR' = .67 PT +15.3	13.9	PT' = .75 SR +12.2	14.7
7. Composite of Groups 1-4	182	SR' = .77 PT + 9.7	11.3	PT' = .83 SR + 9.8	11.8

TABLE 3. *(Continued)*

Group: Pattern of Loss	No. Cases	Speech Reception vs AMA Percentage			
		Equation for Predicting Speech Reception (SR')	S. E. of Est. in DB.	Equation for Predicting AMA Percentage (%')	S. E. of Est. in %
1. Flat	50	SR' = .46% + 26.8	9.0	%' = 1.24 SR − 11.2	14.7
2. Gradual high tone	50	SR' = .63% + 17.1	12.9	%' = .87 SR + 15.5	15.2
3. Marked high tone	32	SR' = .35% + 25.1	9.8	%' = .69 SR + 20.0	13.8
4. Notched beyond 2048 c. p. s.	50	SR' = .59% + 13.3	10.5	%' = 1.14 SR − 2.2	14.6
5. Atypical, no major category	50	SR' = .62% + 18.3	8.6	%' = 1.03 SR − 2.8	11.2
6. Unselected	100	SR' = .53% + 22.0	13.5	%' = .97 SR + 1.9	18.2
7. Composite of Groups 1-4	182	SR' = .59% + 17.0	11.7	%' = 1.03 SR + 3.0	15.4

IT IS IMPORTANT to define the *predictive relations* between speech reception scores and pure tone losses as these relations apply to various audiometric patterns. We need to know whether these predictive relations vary from one contour of loss to another. To this end, Table 3 summarizes the regression equations and standard errors of estimate for the seven groups under consideration. First examination of these results yields an impression of considerable variability from group to group. Nevertheless, common trends appear and specific features stand out.

1. Both the slope coefficents and the constants for all equations covering Group 3 (marked high tone loss) are highly divergent from the corresponding figures for all other groups. The result is a function of the definitely lower coefficients of correlation for Group 3. It must be noted, moreover, that the regression equations for Group 3 are such that prediction from one measure to another is here less useful than for other groups.

2. Generally speaking, within a given group, the equation for predicting SR' (speech reception) from PT (512-2048 c. p. s. average) is relatively similar to the companion equation for predicting PT' from SR. Minor differences appear between groups, but there is no systematic trend which suggests that the coefficients in the various equations are integrally dependent upon pattern of pure tone loss. The only notable discrepancy occurs in the case of Group 4 (notched beyond 2048 c. p. s.), where the slope coefficient is .75 for prediciting SR' and 1.0 for predicting PT'. However, the writer is of the opinion that chance factors are responsible for the discrepancy in Group 4 between SR' and PT' equations. It seems safe to conclude that, for a given audiometric contour, prediction in one direction deviates from the perfect one—to—one relation approximately as much as does prediction in the other direction.

3. Systematically, all equations for predicting SR' (speech reception) from % (AMA percentage) have markedly smaller slope coefficients and greater positive constants than the corresponding equations for predicting %' from SR. Except for Groups 2 and 3, the slope coefficient for %' approaches or exceeds 1.0. Even for these two groups the slope coefficients are .87 and .69, respectively. For the reverse predictions the slope coefficients range from .35 to .63. This situation merely confirms a fact which could be deduced without recourse to experimentation. To explain: The AMA percentage method considers all pure tone thresholds of 10 decibels or better as not contributing to per-

centage of loss, and 99 per cent of this loss is assigned by the time the pure tone loss has reached 90 decibels. Thus, the percentage scale is sharply condensed in relation to the decibel scale. The lack of parallelism between scales accounts for the asymmetry between the SR' and %' equations for a given group. However, the asymmetry seems independent of audiometric contour. Secondary factors account for the discrepancies in the equations for the various groups.

4. The standard errors of estimate vary from measure to measure from group to group. The observed variations are the result of numerous factors. Most important among these factors are (1) selective influences due to the arbitrary definition for each group, and (2) the magnitudes of the respective coefficients of correlation. In general, except as related to the coefficients of correlation, these standard errors do not show systematic trends which suggest that they are influenced by audiometric patterns. However, all the standard errors are relatively large even for a clinical situation. Thus, there is a rather wide margin of uncertainty in all predictions made from the equations in Table 3. This margin, incidentally, is comparable to that found with other Deshon groups and reported elsewhere (2).

In general conclusion: the following features stand out particularly in the foregoing consideration of the influence of audiometric pattern on the interdependence between speech reception and pure tone loss.

1. The degree of interdependence between speech reception and pure tone loss is much less for marked high tone loss than for other audiometric patterns.

2. The degree of interdependence between speech reception and pure tone loss is approximately the same for unselected audiograms as it is for selected groups covering, respectively, flat losses, gradual high tone losses, audiograms notched beyond 2048 c. p. s., and atypical contours. In general, then, the interdependence between the two types of test shows little variation with pattern of audiometric loss.

3. Loss for frequencies beyond 2048 c. p. s. has almost no bearing on speech reception for the Harvard bi-syllabic word lists. Hughson and Thompson (4) reached a similar conclusion from results obtained with the Bell Telephone Intelligibility Lists.

4. Speech reception thresholds and 512-2048 c. p. s. averages show good numerical correspondence. The only exception is Group 3 (marked high tone loss), where speech reception thresholds showed a mean superiority of more than 6 decibels over 512-2048 c. p. s. averages.

5. Audiometric contour affected the predictive relations as revealed by regression equations only to the degree that these equations were dependent upon the coefficients of correlation between speech reception scores and pure tone criteria. Furthermore, while the regression equations outline the general trend of interdependence between the two types of measure, a wide margin of uncertainty accompanies prediction in either direction from an individual patient's score.

B. Relative usefulness of the 512-2048 c. p. s. average and the AMA percentage score.

The 512-2048 c. p. s. average is a useful criterion for comparing audiometric findings with speech reception scores. However, being limited to three test frequencies and carrying no differential weighting, one may question whether the 512-2048 c. p. s. average is superior for comparison with speech reception scores to a criterion covering a wide frequency band and incorporating judicious weighting to accommodate the diverse factors operating in everyday hearing.

The AMA percentage method yields a weighted score derived from a frequency band which is four octaves in width. The question arises whether such a score is preferable for clinical use to a simple average derived from a narrower frequency band. The data in the present study allow exploration of the question in relation to a variety of audiometric patterns.

The first step in answering the question is to determine the closeness of interdependence between simple averages and AMA percentages. To explain: Both scores are abstracted from the same raw data, the audiogram. However, the 512-2048 c. p. s. average is an unweighted mean of 'better' thresholds at three test frequencies. The difference in acuity between the two ears is ignored. By contrast, the AMA method yields a weighted score based upon five thresholds for each ear and taking cognizance of the relation between ears. One would therefore expect that the two criteria would not be completely equivalent. The question is how much and in what ways they fail to achieve perfect interdependence.

The degree of interdependence may be explored by correlating the scores derived according to one method with those for the same patients according to the other. Table 4 reports the coefficients resulting when such correlations were computed for the seven groups under consideration in this paper. It is immediately clear from the table that there is a high positive correlation between the 'better ear' average for 512-2048 c. p. s. and the AMA percentage of loss. Even Group 3 (marked high tone loss), which in the previous section stood apart, has a coefficient of .89. All other coefficients range from .93 to .96. The assembled results allow two conclusions to be drawn.

1. The results with Groups 1-5 show that, for a particular audiometric contour, the two types of score are closely related. In other words, patients are arranged in highly analogous sequences by the two methods of summarizing the audiogram. The sequence is only slightly changed by the differential weighting and by the consideration of both ears which the AMA method incorporates. However, the lack of perfect correlation indicates that these two factors do have some effect on sequence even for a group which is homogeneous in audiometric pattern.

2. Groups 6 and 7, which included varied audiometric patterns, showed as high correlations as were found for the groups selected according to audiometric curve. Therefore, *the 512-2048 c. p. s. average and the AMA percentage score are methods of codi-*

TABLE 4. Coefficients of correlations and related statistics on 512-2048 c.p.s. average and AMA percentage obtained for groups representing different audiometic patterns.

Group: Type of Loss	*No. Cases*	*Coefficients of Correlation*	*512-2048 c. p. s.*		*AMA Percentage*	
			Mean	*Std. Dev. in Decibels*	*Mean*	*Std. Dev. in Percent*
1. Flat	50	.95 ± .01	50.2	15.5	51.3	22.6
2. Gradual high tone	50	.94 ± .01	61.3	17.7	67.3	22.7
3. Marked high tone	32	.89 ± .02	48.8	12.1	49.3	15.9
4. Notched beyond 2048 c. p. s.	50	.96 ± .01	37.3	21.3	39.4	25.6
5. Atypical, no major category	50	.93 ± .01	45.5	14.3	45.6	20.3
6. Unselected	100	.93 ± .01	47.7	20.6	47.8	26.4
7. Composite of Groups 1-4	182	.96 ± .01	49.4	19.6	52.1	24.8

fying the pure tone test which are closely related even for heterogeneous audiograms.

Table 4 also presents the group means and standard deviations for 512-2048 c. p. s. averages and for AMA percentages. One notes that, within a given group, the numerical values of the two means are very close to one another (except for Group 2, gradual high tone loss). The close correspondence does not signify, however, that numerical equivalence persists throughout the scales for the two types of score. In fact, since the standard deviations are systematically larger for AMA percentage than for 512-2048 c. p. s. average, it is clear that except near the middle of each scale there is considerable numerical discrepancy between the two scores abstracted from a single audiogram. The discrepancy is a function of the fact that AMA percentage scores are condensed into a range of 80 decibels, while 512-2048 c. p. s. averages are not.

The second step in assessing the relative clinical usefulness of AMA percentage scores and of 512-2048 c. p. s. averages is to compare each with speech reception thresholds. The rationale is obvious. The speech reception threshold is a generalized measure of the shift in acuity for perception of equated speech stimuli. Therefore, the audiometric scores which show the better parallelism with speech reception thresholds present a simpler gauge of the latter and, presumptively, are preferable for most clinical applications.

The data already presented in Tables 1, 2 and 3 compare speech reception thresholds with AMA percentages and with 512-2048 c. p. s. averages. Summarizing the facts which appear in these tables, one concludes:

1. Speech reception correlates equally well with the two pure tone criteria. Their degree of relationship with speech reception therefore is not in itself basis for preference.

2. The central tendencies (group means) of the two pure tone criteria are highly equivalent for a given experimental group, and (except for Group 3) these two means are numerically close to the mean for speech reception. This factor is therefore not a basis for preference.

3. For a given experimental group, the standard deviation for the 512-2048 c. p. s. averages is closer to that for speech reception thresholds than is the standard deviation for AMA percentages. This fact, plus the trends revealed by the various regression equations, is evidence that *the scale for the 512-2408 c. p. s. average is more nearly equivalent to the scale for speech reception thresholds than is the AMA percentage scale.* In other words, considering a wide range of hearing losses, thresholds for speech reception show greater numerical parallelism with 512-2048 c. p. s. averages than with AMA percentage scores. Here is a strong reason for favoring the 512-2048 c. p. s. average.

Three practical considerations also favor the view that the 512-2048 c. p. s. average is preferable to the AMA percentage. These considerations are:

1. There is ordinarily little reason for computing both 512-2048 c. p. s. average and AMA percentage. The close correlations between the two sets of scores indicate that they abstract a common factor from the audiogram. Hence, there is seldom any point in abstracting this factor twice.

2. The 'better ear' average for 512-2048 c. p. s. is more quickly and easily obtained than the AMA percentage score. Brief inspection of the audiogram is sufficient to yield the average.

3. The 512-2048 c. p. s. average differentiates both among mild im-

pairments and among extreme impairments in hearing, while the AMA method does not.

In summary: both statistical findings and practical considerations indicate that the *'better ear' average for 512-2048 c. p. s. is more useful in general clinical situations than is the AMA percentage score.*

C. Significance of systematic differences from one audiometric pattern to another.

As indicated by results reported above, binaural speech reception thresholds show relatively high numerical correspondence with 'better ear' average for 512-2048 c. p. s. However, there is some evidence, as indicated by the data for cases of marked high tone loss, that the numerical correspondence might vary significantly from one audiometric contour to another. It is pertinent to explore this possibility further.

The question may be put as follows: Do patients with unlike patterns of hearing loss show *systematic differences* between their speech reception thresholds and their pure tone thresholds?

The question just stated was easily explored with the seven groups mentioned earlier. To do so it was merely necessary to compute a *difference score* for each patient and then to subject the data for the various groups to statistical analysis.

In practice, each difference score was obtained by subtracting the 512-2048 c. p. s. average from the speech reception loss. When the resultant was a plus value, it indicated that the speech reception loss was greater by the amount of the difference score. When the resultant was a minus value, the reverse was true.

Examination of the frequency distributions of difference scores for the seven groups revealed that, regardless of audiometric pattern, there occurred extreme individual variations in relative acuity for pure tones and for speech stimuli. Within *every* group the range of difference scores was great. Even in Group 1 (flat), which showed the least dispersion, the range of difference scores was from –23 to +19 decibels. Again, the standard deviations for the various groups lay between 9.8 and 13.8 decibels. Thus, regardless of audiometric pattern, some patients showed high correspondence between speech reception threshold and 512-2048 c. p. s. average, while other patients showed wide discrepancy between the two estimates of hearing loss. However, Group 3 (marked high tone loss) was again distinctive. Here the difference scores ranged from –46 to +11 decibels. That is, the patients in Group 3 whose difference scores were extreme tended to have poorer pure tone averages than speech reception thresholds. The remaining six groups all had essentially normal frequency distributions. Thus, in all groups except Group 3 (marked high tone loss), substantial discrepancies occurred in either direction.

When the difference scores for the seven groups were subject to analysis of variance and *t* tests, the following results emerged:

1. Group 3 (marked high tone loss) was the only group which stood apart from all other groups with statistical significance.

   a. Group 3 was separated from Group 1 (flat), Group 4, (notched at 2048 c. p. s.) and Group 5 (atypical) by *t* scores which were at the level of 2% significance. The mean loss by 512-2048 c. p. s. average for Group 3 was over 6 decibels greater than the mean loss by speech reception. With the other three groups, the mean losses by both measures were about the same. One may conclude that, at the level of statistical abstraction, patients with marked high

tone loss have speech reception thresholds which are superior to their 512-2048 c. p. s. averages. In contrast, patients of the other three types have speech reception thresholds which are equivalent to their 512-2048 c. p. s. averages.

b. Group 3 stood apart from Group 6 (unselected) at the level of 1% significance. A conclusion similar to the one just stated applies here.

c. Group 2 (gradual high tone loss) stood apart from Group 3 with only 10% significance. The mean loss by 512-2048 c. p. s. average for Group 2 was almost 2 decibels greater than the mean loss by speech reception. Thus, Group 2 lay intermediate between Group 3 and the other special groups.

d. Group 7 was not compared through analysis of variance with Group 3, since the former is composed of special groups and would merely represent a composite of the relations already described.

2. Difference scores for Groups 1, 2, 4, and 5 do not show statistically significant separations. Neither are any of these groups separated significantly from Group 6. In other words (at least in this study), the numerical correspondence between 512-2048 c. p. s. average and speech reception threshold was not importantly affected by whether the audiogram was flat, of gradual slope, notched at 2048 c. p. s., or too irregular for classification in a major category.

THE RESULTS just summarized lead to an interesting conclusion: namely, speech reception for the Harvard bi-syllabic words appears to be more dependent upon acuity at 512 c. p. s. and 1024 c. p. s. than upon acuity at 2048 c. p. s. The rationale for this statement derives from the tendency in Group 3 (marked high tone loss) for speech reception threshold to be better than the 512-2048 c. p. s. average. Here, because of the type of curve involved, the 2048 c. p. s. threshold is poorer than the other two thresholds which contribute to the pure tone average. Since the speech reception score is better than the 512-2048 c. p. s. average, the poorest threshold contributing to the average (namely, 2048 c. p. s.) is relatively less closely bound to speech reception threshold than are the thresholds for the other two test frequencies (512 c. p. s. and 1024 c. p. s.) Such a conclusion is further confirmed by the fact that, in terms of the difference score data, Group 2 (gradual high tone loss) lay intermediate between Group 1 (flat loss) and Group 3 (marked high tone loss). Here is evidence of a trend which increases in statistical significance as the degree of high tone loss becomes greater. Incidentally, this result is counter to the finding of Hughson and Thompson (4) for the Bell Telephone Intelligibility Lists.

It must be remembered, however, that the trend just outlined and its implications are statistical abstractions which do not apply without reservation to individual patients. Within every audiometric category a wide range of difference scores was observed. Thus, individual variations in relative acuity for speech and for pure tones are a clinical fact of as great importance as the trends revealed by homogeneous groupings of patients.

Summary and Conclusions

FIVE DISTINCTIVE groups were isolated on the basis of pattern in audiometric curve. These were: flat loss, gradual high tone loss, marked high tone loss, curves with notches beyond 2048 c. p. s., and atypical audiograms not conforming to any major type. Two heterogeneous groups (one unselected and one be-

ing a composite of all the distinctive groups except the atypical) were also included. These seven groups were compared on the basis of three criteria of auditory acuity: namely, speech reception threshold; 'better ear' average for 512-2048 c. p. s.; and AMA percentage of loss. The data were treated by correlation methods and by analysis of variance.

The following results and conclusions emerged:

1. High positive correlation between speech reception and each of the two other criteria were found for all groups except the one for marked high tone loss. In general, the correlations agree with previous studies on unselected samples.

2. The weight of this study is to indicate that acuity for frequencies at the extremes of the audiometric test range is of minimal relation to speech reception threshold as determined in the present study. Most striking is the failure of the group with notches beyond 2048 c. p. s. to be differentiated on any important point from the group with flat losses. This finding confirms a view expressed by Hughson and Thompson (**4**).

3. Group distributions for difference scores between speech reception threshold and pure tone average were not significantly differentiated except for cases of marked high tone loss. The latter showed a trend toward better score on speech reception than on pure tone average. The implication is that acuity between 512 and 1024 c. p. s. is more closely related to speech reception for equated words than is acuity between 1024 and 2048 c. p. s.

4. Marked high tone loss cases are differentiated by sufficient statistical factors so that this group may be accepted as constituting a special category when it comes to clinical interpretations involving speech reception thresholds and pure tone averages. This finding is counter to the experience of Hughson and Thompson (**4**). The other types of audiometric pattern explored in this study did not show distinguishing features at the level of statistical significance, although there was some evidence that the gradual high tone loss group is transitional between flat and marked high tone loss categories.

5. The AMA percentage method, although it correlates well with speech reception, gives less numerical parallelism with the speech measure than does the 512-2048 c. p. s. average. This fact, plus the extra labor involved in the percentage method, makes the pure tone average a more useful clinical tool except for special purposes. Certainly no statistical reason emerged for favoring a percentage score over a simple 'better ear' average.

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A Test of Lip Reading Ability

Jean Utley*

THERE is a great need for a standardized achievement test of lip reading ability for acoustically handicapped children and adults. Up to the present time an individual's lip reading ability has usually been judged subjectively by teachers and others. Measures of lip reading ability are practically non-existent at the present time and no standardized measure whatsoever has been developed. Such a test could be useful in a variety of ways:

1. As a measuring agent in school placement and school progress, as is the case with other educational tests.

2. As an additional measure which could be combined with other tests of ability and aptitude in order to study the growth and development of the individual.

3. As a basis for comparing the relative effectiveness of different methodologies and teaching techniques.

4. As a basis for the later construction of a diagnostic test of lip reading ability.

The purpose of the present problem will be to seek the answer to the following major question: Is it possible to construct a reliable and valid test of lip reading ability having a sufficiently wide range of items to measure the lip reading ability of individuals from the third grade through the adult level?

In order to obtain a satisfactory answer to the major question, answers must be found for the following supporting questions:

1. To what extent are the skills of word, sentence and story recognition interrelated as shown by coefficients of correlation?
   a. Are the degrees of overlapping of the skills so high as to represent a single unitary ability? Or
   b. Are the skills sufficiently specialized that they should be measured separately for diagnostic purposes?
2. What is the internal reliability of each part of the test as shown by the inter-form correlations?
3. What degree of validity does this test have as shown by:
   a. its logical derivation as a representative work-sample in everyday life, and
   b. the correlation with teacher's ratings on lip reading ability from ordinary observation in school situations?
4. What are the correlations of scores on this test of lip reading ability with:
   a. other facets of language function, such as reading and school achievement, and
   b. other factors suspected to be related, such as grade placement, chronological age and age of onset of deafness?
5. What is the best criterion to be used as the basis for the standardization of a test of lip reading ability?

The viewpoint of the writer is that a standardized test of lip reading is just as feasible as are the generally

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accepted tests of reading and mental capacity, as opposed to the other point of view that such a test is impossible to the extent that experiences of daily life cannot be standardized to the point of incorporation in test material. It is true that the isolation of lip reading from such factors as language ability, intelligence, memory span and ability to reproduce or synthesize what is understood in lip reading is a difficult task. Yet the segregation of reading skill, for example, from the relevant factors is quite impossible, too, but standardized measures of reading ability have been developed, accepted, improved and found to be valuable.

The selection of a representative sample of oral language, commonly used by individuals in all parts of the country, is undoubtedly difficult. All that could be hoped for would be that the selected material contributed by educational and psychological sources, followed by sufficient preliminary experimentation, would be representative of the types of tasks met in lip reading by the majority of the individuals to whom the test would be administered.

A qualitative approach was taken to determine what a representative sampling of oral language should be. The importance of using isolated statements is quite obvious because they serve as a large part of our normal language experience. The importance of using groups of related sentences is equally obvious. In the initial thinking it seemed more difficult to justify the use of isolated words in a test; however, Howes (**1**) had reported finding that a lip reading vocabulary of individual words was critical in lip reading. Most of the previous studies had included words; however, the data were not completely treated, therefore the function of words in a lip reading test was not known. It was therefore decided to include words, sentences and groups of related sentences in the proposed test of lip reading ability. A trial test was constructed for pilot experimentation.

Thorndike's list of most frequently used words served as the basis for the selection of words. A list of 100 words was compiled by extracting every tenth word from the first 1000 most frequently used words. No attempt was made to provide for a balance of speech elements in the words.

The sentence test was made up of 10 trial statements, 50 common expressions and 20 idiomatic sentences.

The tests were administered to a group of 200 subjects of different grade levels, with normal hearing. The material was presented without voice.

The test material proved to have wide enough range to allow every child in the youngest group to score on the test, and at the same time no individual in any of the groups approximated a perfect score. A definite trend made clear by this preliminary investigation, however, was that the scores increased as the maturity of the group increased. Failures and successes did not tend to be confined to certain test items. The over-all range of lip reading ability as shown by individuals with normal hearing seemed to increase with experiences in life. The data revealed a constant upward trend in lip reading proficiency for both word and sentence recognition.

Following the investigation of the lip reading ability of individuals with normal hearing, an attempt was made to arrange the test items, both words and sentences, according to a scale of difficulty. The number of correct responses to each test item as shown by the group of normal hearers was recorded. The items were thus rearranged in what appeared to be a scale of difficulty. The common expressions and idiomatic sentences were combined to form one test. The entire

test of lip reading ability, consequently, was made up of 100 words and 70 sentences.

The revised test was administered to 110 students in two schools for the deaf. All of this group were known to have at least third grade reading ability as determined by the Standford Achievement or Gates Reading tests. The tests were administered to the deaf and hard of hearing subjects in groups of 20 or less. The test items were spoken using as little voice as possible.

The order of difficulty of the test items, as determined by the results of the test with hearing individuals, did not prove to serve the purpose for which it was intended. As was suggested by the results of the previous preliminary work, the successes and failures as recorded by the written responses of the deaf and hard of hearing subjects, did not tend to be confined to specific test items.

Following the testing of both the hearing and the handicapped groups, the sentences were scored in two ways, by correct idea and by number of words correctly recorded. The resulting correlations of .98 and .97 between the two methods of scoring, for the two groups respectively, indicated that sentences could be corrected according to number of correct words recorded which is the more objective method.

In comparing the results of both investigations discussed above, an additional observation is presented. The handicapped group shows a higher degree of proficiency in lip reading than even the most advanced group of normal hearing subjects, as shown by the means, medians and ranges of scores for both word and sentence tests.

During the early formative stages of the present research it was hoped that some sort of story test might be used. The inclusion of short, dramatized skits involving several characters was obviously impossible during the preliminary experimentation. As the nearest practicable facsimile, a series of six paragraphs were selected from the Gates Reading Tests. Following the presentation of each paragraph, three questions were written on the blackboard. The subjects were requested to write the answers. The paragraph test was presented to the children in one of the schools for the deaf. The results, however, did not contribute statistically to the preliminary experimentation. The material included in the paragraphs chosen did not sufficiently represent experiences encountered in life and, therefore, did not provide valid test material. A great deal was learned, however, concerning the necessity for well-formulated questions pertaining to the material presented. It was revealed that logical answers might be interpreted to have bearing on the specific question asked, yet not be formulated on the basis of understanding derived by lip reading.

On the basis of the results of the preliminary investigation of lip reading ability of acoustically handicapped subjects, statistical item-analyses were made in order to determine which words or which sentences were markedly contributing to obtained scores on the test. The items which were found to be understood by almost all of the subjects were removed from the test proper and used for practice items to explain the test procedure. The words and sentences which appeared to be too difficult for one reason or another were likewise removed from the test. By this procedure, the tests were shortened to include the 62 sentences and 72 words which appeared actually to be functioning in the measuring process. Each test was preceded by five practice items.

The reliability of each of the shortened tests was computed by the odd-even technique. The Sentence Test showed a coefficient of reliability of

.88 and the Word Test, .84. It was thought that the tests' internal reliability was sufficiently high to warrant dividing each of the tests into two parts. Thus, Forms A and B were constructed for both the Sentence Test and the Word Test.

At this point a story test was developed which consisted of six short stories based on interests and experiences thought to be common to the lives of children of intermediate school age. Each story included some element of unexpectedness, and was followed by five questions based on the conversations within the story. A consistent effort was made to ask questions which could be correctly answered only by an understanding of the lip reading involved, not from the contextual clues alone.

The entire test of lip reading ability thus consisted of Forms A and B of the Sentence Test, Forms A and B of the Word Test, and the Story Test.

THE next step was preparation of the above material for filming. The Sentence and Word Tests were photographed on 16 mm. black-and-white film. An attractive, vivacious university co-ed, unaccustomed to speaking to the deaf or hard of hearing, was selected to present both the Sentence and Word Tests. The photography was done at close range. The test material was dictated to the subject while the test was being photographed, in an effort to avoid a stereotyping of the material.

The Story Test was photographed in technicolor film, four different subjects—a little boy, one man and two women—presenting the material. No more than two individuals were included in any one story. The subjects were photographed in the environmental situation in which the incidents might have occurred. A direct effort was made to enable the lip reader to supplement the conversational dialogue with non-verbal clues.

Rather than stopping the film and turning on room lights in order to allow pupils to record responses, blank film of sufficient length to allow fifteen seconds between sentences and questions and ten seconds between words was spliced into the test. Small individual lamps provided enough light by which to record the answers on mimeographed forms. It was thought that this technique would add to the controlled conditions necessary to the standardization of the test.

The test material was assembled and edited for presentation in the following order: Part I (Sentence Test)—Practice Sentences, Forms A and B; Part II (Word Test)—Practice Words, Forms A and B; Part III (Story Test).

Introductory paragraphs including directions for taking the tests were inserted before each major part of the test. The completed motion picture test of lip reading ability was entitled 'How Well Can You Read Lips?' The actual running-time for entire motion picture test was an hour and fifteen minutes.

The equipment necessary for the administration of the test of lip reading ability consisted of a 16 mm. projector for silent motion pictures, a reasonably good screen for purposes of projection, specially built individual lamps and mimeographed record blanks. The test was administered in rooms which could be sufficiently darkened. It was thought that a group of 20 or less would be an appropriate number to take the test at one time in order to insure ample space between the subjects and the screen, and also to avoid a distorted view of the test material as presented on the screen.

Individual lights were provided for each person taking the test. The lights consisted of six-watt bulbs with aluminum shields. The lights could remain turned on throughout the test, since the light was directed only to a small area of the desk or table on which it was placed. At no time did the glare detract from the individual's ability to watch the image on the screen, or from the distinctness of the visual stimulus. Each lamp was a complete unit in itself.

The motion picture test of lip reading ability was scored in the following way:

Part I (Sentence Test): One point was allowed for each correct word recorded. Homophenity of words was not considered.

Part II (Word Test): One point was allowed for each word, or a word homophenous with that word, correctly recorded.

Part III (Story Test): One point was allowed for each correct answer recorded.

The scores on the various forms of the test were combined to make the total test score.

THE test, as described above, was administered to 761 deaf and hard of hearing individuals enrolled in schools or societies for the acoustically handicapped in four large cities. An effort was made to include subjects from as many different types of educational set-ups as possible. Children from one large state residential school, four public elementary day schools, two public high schools, two conservation of hearing classes in a public school system, and one Society for the Hard of Hearing composed the total group which took the test. The only stipulation made for the selection of the children to take the test was that each child must have approximately third grade reading ability or above. No other basis of selection was used in any school.

Mimeographed blanks were presented to the teachers and principals for the purpose of recording the data requested. These data included the individual's name, chronological age in years and months, grade placement, teacher's name, cause of deafness, age of onset of deafness, number of years in school, reading grade level and total achievement score.

The data obtained from the various schools were combined and studied in terms of one large group. No attempt was made to keep the data from the respective schools segregated. The object of the procedure was to standardize a test of lip reading ability on the basis of scores made by a large sampling of the population.

For the entire group of 761 cases, the chronological age range was from 8 to 21 years; the grade placement range, from first through twelfth; the age of onset of deafness range, from birth through 15 years; the reading level range, from 2.0 to 12.0+; and the school achievement range, from 2.0 to 10.9. It was believed that the request for data regarding the number of years in school was misinterpreted and the data were, therefore, not included in the statistical analyses.

For 702 cases, data reporting cause of deafness were available, which permitted a rough classification. 'Acquired' deafness was recorded for 303 cases, 'congenital' deafness for 256 cases, 'unknown' deafness for 135 cases, and otosclerosis was specified for eight cases. From the records it was apparent that the above data were not sufficiently reliable to be used in scientific experimentation. The original premise that the cases in the study could be grouped under 'exogenous,' 'endogenous,' 'border-line' and 'unknown' necessarily had to be abandoned.

The teachers were asked to rank the children in their classes according to lip reading ability. Mimeographed forms were provided for this purpose.

Table 1 is presented for the purpose of drawing together the highpoints of the data resulting from the inter-correlations between the total scores, the scores on the two forms of the test, the scores on the three parts of the test, and the factors related to lip reading.

THE coefficient of correlation between Forms A and B of the Sentence Test is .866. The reliability of the combined forms of the Sentence Test is .928. The coefficient of correlation between Forms A and B of the Word Test is .663. The 'corrected' reliability of the entire Word Test is .797. Since only one form of the Story Test was used, and the stories could not be equated, nor could the questions be evaluated except in terms of the stories themselves, the reliability of this test can only be demonstrated through the correlation with scores made on other parts of the test.

The coefficient of correlation between the A Forms and the B Forms

TABLE 1. Summary of relationships among individual factors considered in the study. I-A, I-B, etc., refer to the various forms of the lip reading test. All correlations are positive. Each r is accompanied by its standard error.

	I-A	*I-B*	*I A+B*	*II-A*	*II-B*	*II A+B*	*I-B & II-B*	*III*	*Total Test*	*Reading*	*C. A.*
I-A											
I-B	.866 .005										
I(A+B)											
II-A	.687 .012	.705 .012			.663 .013						
II-B	.687 .012	.678 .012									
II(A+B)			.778 .009								
III	.694 .012	.752 .010	.749 .010	.560 .016	.666 .013	.614 .014					
I-A & II-A							.893 .004				
II+III			.869								
I+III						.804					
I+II								.786			
Total Test	.960 .001	.957 .001	.984 .000	.784 .009	.720 .011	.858 .006		.797 .008			
Reading	.500 .021	.507 .021	.519 .021	.352 .025	.289 .026	.366 .024		.545 .020	.525 .020		
Total Achieve.	.563 .031	.576 .031	.629 .028	.478 .036	.424 .038	.492 .035		.580 .031	.636 .027	.912 .007	.544 .032
C. A.	.407 .020	.360 .021	.396 .020	.272 .022	.332 .022	.325 .022		.201 .023	.383 .021	.295 .026	
Age of Onset	.100 .025	.114 .025									
Grade Place.									.552 .018		
Teacher Ratings									.425 .020		

is .893. The 'corrected' reliability for the whole test is .943. The index of reliability, or coefficient of validity, is .971.

Correlations resulting from the relationship between the entire Sentence Test and the entire Word Test (.778), between the entire Sentence Test and the Story Test (.749), and between the entire Word Test and the Story Test (.614), indicate that the relationship between ability to lip-read sent-

ences and ability to lip-read words is only slightly higher than the relationship between ability to lip-read sentences and the ability to lip-read stories. However, according to the results of the test for the group studied, ability to lip-read words has a higher predictive value for ability to lip-read sentences than for ability to lip-read conversation; and conversely, ability to understand conversation has greater value for predicting ability to lip-read sentences than to lip-read words.

Chronological age seems to have less value in predicting ability in lip reading than either reading or total achievement scores. None of these factors, however, shows a highly significant relationship to the lip reading ability of this group of individuals as measured by the test.

The statistical value of the relationships involving age of onset of deafness and lip reading ability as measured by this test proved to be of no significance.

Grade placement is another factor on which too much reliability cannot safely be placed, because of the inconsistencies existing among the grading systems of the different schools.

Teachers' ratings were correlated with Total Test Scores, according to classes. The inadvisability of using teachers' ratings as a criterion for establishing validity of the test is statistically represented.

In view of the foregoing results and interpretative discussions it is clear that none of the factors considered could be used as a criterion for standardization of the test of lip reading ability. Not one of the factors —reading grade level, school achievement level, chonological age, school placement, or age of onset of deafness —indicates significant relationship to lip reading proficiency.

The entire test[1] was finally divided into two parts, to be known hereafter as Tests I and II. Test I is composed of Form A of the Sentence Test, Form A of the Word Test and the Story Test. Test II is composed of Form B of the Sentence Test, Form B of the Word Test and the Story Test. The Story Test constitutes a part of both tests since only one form is available at present.

Because of the lack of relationship found to exist between the test and any of the factors considered as possible criteria, it was decided to group the scores and determine percentiles in order that the relative status of each of these raw scores could be ascertained.

The percentile ranks assigned to the original scores on Tests I and II as shown in the table which is found in the original dissertation and in the manual which accompanies the films, enable the observer to interpret more adequately the performances on both tests. The percentile rank of a given score is the percentage of measures in the whole distribution which are lower than the given score. In other words, the percentile rank of a given score is the number representing the percentage of the cases in the group lying below the given score value. If, for example, an individual makes a score of 54 on Test I, his percentile rank is 65; while a score of 57 or 58 on Test II is also equal to a percentile rank of 65. Through the use of the table of percentile ranks it is possible to determine the particular rank of any individual total score made on Test I or Test II, and also to determine whether or not an individual has improved in lip reading proficiency since either test was administered at a previous time. Lip reading achievement can probably be best measured by administering Test I, followed by Test II at a later time. Whether one test is given at two different times, or whether one test is followed by the other, interpretations of the total score should be made in terms of the values set forth in the table referred to above.

[1]This test can be obtained from DeVry Films and Laboratories, 1111 Armitage Avenue, Chicago, Illinois.

Likewise, norms have been set up in terms of total scores on the entire test. The administration of all forms during a testing period would undoubtedly become tiresome, yet produce a more reliable evaluation of the individual's lip reading ability.

IN summarizing the present study the following conclusions are defensible:

From the data it is possible to give an affirmative answer to the major question: It is possible to construct a reliable and valid test of lip reading ability having a sufficiently wide range of items to measure the lip reading ability of individuals from the third grade level through the adult level.

From the data the supporting questions are to be answered in the following manner:

1. The skills of word, sentence and story recognition are interrelated, as shown by the coefficients of intercorrelation. The relationships are high enough to indicate that there is a great deal of overlapping among the various skills, yet, the combined skills do not represent a single unitary ability; word, sentence and story recognition should be measured separately for diagnostic purposes. Ability to lip read sentences can be predicted more reliably from ability to lip read stories than from ability to lip read words; ability to lip read words can be more reliably predicted from ability to lip read sentences than from ability to lip read stories; and ability to lip read stories can be more reliably predicted from ability to lip read sentences than from ability to lip read words.

2. The internal reliability of each part of the test as shown by the interform correlations is high enough to be significant for practical purposes. The coefficient of reliability for the Sentence Test is .928; the coefficient of reliability for the Word Test is .797; and the coefficient of reliability for the entire test is .943.

3. The validity of the test is established by its logical derivation as a representative work-sample from everyday life, and by the high reliability resulting from the inter-relationships of the best material. Reliable prediction of lip reading ability cannot be made from teachers' judgment ratings. There is as high correlation between teachers' ratings and success on this test, however, as there is between teachers' ratings and success on similar objective tests.

4. Lip reading ability cannot be predicted from reading level or school achievement. Lip reading ability cannot be predicted from chronological age, age of onset of deafness, or grade placement.

5. The best criterion to be used as the basis for the standardization of a test of lip reading ability is the distribution of scores in percentile ranks.

6. A significant conclusion from the preliminary experimentation is that it is not possible to arrange test items in order of difficulty. The successes and errors made by the group tested are distributed evenly throughout the whole test. The highest scores are obtained from a higher over-all response, and the poorer scores are mainly due to failure with one or another specific group of items.

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Hypnosis In A System of Therapy For Stutterers

Wilbur E. Moore*

THE RATIONALE of various current systems of therapy for stutterers is based for the most part upon controversial and still unproved theories of causation, even though more and more the accredited speech correctionists accept in their program of treatment an eclecticism which is at once contradictory and discrediting to their inferences regarding theory. Hence, it is unusual if an ardent exponent of the biochemical or the dominant gradient theory, for example, is less careful in his application of psychotherapy than are those who view stuttering as a psychoneurosis or a semantogenic disorder. In one respect, however, there appears to be among the members of the American Speech Correction Association a striking uniformity of opinion, if one may judge by conversations with colleagues and by the absence of published studies in a particular area. That opinion is that although waking suggestion has an important place in the management of stutterers, hypnosis deserves little consideration either as a therapeutic device or a research technique.

In the belief that a valuable supplementary method of therapy and a promising procedure of research has been largely ignored, the writer proposes to report briefly on his experience with hypnosis as a supplementary method in a system of therapy which includes: (1) the treatment of symptoms (**17**, **18**); (2) psychotherapy, both environmental and individual (**1**, **3**, **4**, **6**, **12**, **13**); (3) the formulations of general semantics (**2**, **8**, **9**, **10**, **11**); and (4) clinical apparatus for facilitating and measuring the stabilization of basic physiological processes[1] (**16**, **17**).

Classification of Subjects

DURING THE PAST four years, 40 stutterers who have been examined and treated by the writer personally, each receiving at least 18 hours of individual work supplemented by at least 20 hours of group therapy distributed throughout a period never shorter than seven weeks, have submitted to hypnosis by the method of inhibited writing. Of the 40, five did not respond to suggestion beyond the hypnoidal stare, and four fell into a hypnotic sleep but made no somnambulistic responses. Each of the other 31, however, was sufficiently responsive that some type or degree of somnambulism could be induced.[2] Although the behavior of each subject during any one trance varied both from that of preceding trances and from the hypnotic behavior of other subjects, the

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[1]The Maico Recording Psychometer, which registers the psychogalvanic response, has proved particularly valuable in measuring reduction in 'thalamic tension' as relaxed patterns of speech such as the 'bounce,' the 'whispered bounce,' and the 'phrasal bounce' are mastered. Quantitative studies are now in the process of being completed.

[2]Hull and his students (**7**) report that 61 per cent of their subjects were hypnotizable. Estabrook (**3**) reports one out of five.

subjects' characteristic responses may for the sake of convenience be divided into three types as follows:

A. Twelve subjects with limited hypnotic behavior consistently made the following responses:

1. Fell into what appeared a light sleep with eyes closed, breathing regular, and body slumped.

2. Did not awaken until the hypnotist awakened them; if dismissed before being awakened, remained quietly in their chairs.

3. Talked easily without stuttering when the suggestion was given that hesitancies would not bother. In only two subjects was there slight stuttering during the hypnotic trance, but in these it could be controlled by suggestion in all hypnotic sessions after the first three.

4. Remained fully oriented with regard to place and time.

5. Were cataleptized with arms held horizontally; but on awaking, subjects reported fatigue.

6. Upon suggestion, both during the trance and following it, reported feeling much relaxed.

7. Would not carry out post-hypnotic suggestions but did report feeling much relaxed and rested for hours after each session.

B. Eleven subjects with marked hypnotic behavior consistently made the following responses:

1. Fell into what appeared a sound sleep.

2. Would not respond when first spoken to.

3. Remained partially oriented with regard to place and time.

4. Arms were cataleptized in horizontal position as long as an hour without fatigue. (Longer periods were not studied.) When asked upon awaking whether their arms were tired, subjects indicated surprise at the question.

5. No matter how severe the stuttering in the waking state, talked easily and fluently for periods as long as thirty minutes when the suggestion that pauses would not bother was given. (Longer periods were not studied.)

6. Talked fluently to strange classes or groups or into microphones for periods as long as thirty minutes. (Longer periods were not studied.) The complexity of the situation as ordinarily determined had no disintegrating effects so long as the subjects received the suggestion that pauses or hesitancies would come easily and without tension.

7. Talked freely and easily about unpleasant or painful experiences.

8. Usually carried out post-hypnotic suggestions with fluency.

C. Eight subjects with apparently little limit to somnambulism consistently made the following responses:

1. Appeared to sleep heavily, with deep, regular breathing.

2. Marked catalepsy; when placed in awkward, unbalanced position remained there for periods of at least thirty minutes.

3. Upon suggestion had illusions and hallucinations. For example, upon being told they were being punished or ridiculed, they would wince or even cry loudly. On these occasions the psychometer invariably indicated marked response.

4. Experiences suggested anaesthesia. When their wrists were slapped soundly, or when their fingers were pierced with a sterilized needle, the psychometer invariably indicated no response.

5. Recalled 'completely forgotten experiences' that were later reported to be extremely unpleasant or painful, and talked about them fluently.

6. Talked fluently both in the trance and in post-hypnotic states before groups of thirty or more.

7. Continued to speak easily following the posts-hypnotic sessions before classes.

8. Reported that they continued to feel deeply relaxed and rested for two and three days and that their speech was 'easy and relaxed.'

Case Reports

SINCE SPACE does not permit case reports on all 31 of the stutterers in whom somnambulistic responses could be induced, the following representative case reports are chosen for inclusion to illustrate the application and the results of hypnosis.

Case 1. L. K., male, age 14. First seen November, 1943. When the case first reported he stuttered so badly that he frequently could not read aloud in school and he was beginning to withdraw from group activities both at school and at home. The mother, who was interviewed, reported that he began 'stuttering' four years previously when he was under an extremely critical teacher. The boy, at that time,

agreed that he first stuttered at the time his mother said. Both reported that it had grown gradually worse until they felt the need of help.

The first step in treating the boy lay in the direction of checking certain practices on the part of teachers who were having the boy stop until he could say a word without stuttering and having him read aloud in class until he could read a passage easily.

The boy was seen twice a week for seven months, during which time he was taught the 'bounce pattern,' the 'whispered bounce,' the 'phrasal bounce,' and finally the 'thought phrasal bounce.'[3] At the same time he was given training in 'consciousness of abstracting,' and extensional evaluation and taught both progressive and semantic relaxation. Within two months his reading was so improved that he was given assignments in reading orally in school, assignments which he was now able to perform well and which, according to his report, he did with pleasure.

At the end of seven months, the boy's mother reported that he stuttered little but that his speech was staccato and jerky. Telephone conversations with the boy, held by the writer and two assistants, verified the report that there was little 'stuttering' but much 'jerkiness.' At this time, the boy was first hypnotized.

At first only limited somnambulistic responses could be evoked, although the case quickly responded well to suggestions of 'deep relaxation,' and in both hypnotic and post-hypnotic speeches, recorded by the Mirrophone, achieved an easy r e l a x e d rhythm with phrasal patterns of four to eight words. Two days later he was again hypnotized and given the suggestion that when he awoke he would deliver 'in an easy, relaxed manner, undisturbed by pauses' his specially prepared speech to a speech pathology class of eighteen college juniors and seniors. He spoke so easily that the class asked why the case had been demonstrated, a few of them thinking that perhaps he was a 'voice case' since his tones were breathy.

Hypnosis was used once a week for one month, precautions being taken at each session to prevent habitual hypnotic behavior. During these sessions the case recalled certain unpleasant speech experiences, which he reported on waking he had 'never thought of.' These experiences included being teased about his speech when he was four, receiving blame for forgetting a Christmas piece when he was 'little,' and being laughed at for it, and two other experiences which the writer is not at liberty to report. In the waking states following each revelation, the experience was 'dated' and incorporated into the extensional evaluation of self which L. K. was building.

In the fall of the following year, L. K. began working in a large chain food store. His speech continued to be easy and relaxed, and he reported only occasionally to the clinic. In May 1945, his mother wrote: 'He works after school and on Saturdays in a big food store where he meets the people constantly. Most peope are unaware

[3]The bounce pattern, so far as the writer knows, was developed by Charles Van Riper and Wendell Johnson at Iowa University. It may be described as easy voluntary repetition of a sound at the beginning of a syllable or word as in D-D-D-D-Detroit or De-t-t-t-t-t-troit. Various adaptations of this basic pattern have been made to include a voluntary whispered repetition until the word can be spoken without tension. The phrasal bounce includes either a whispered or an oral repetition of the initial word in each phrasal pattern in a sentence, i.e., t-t-t-tomorrow morning, a-a-a-a-at this hour, D-D-D-D-Doctor J. O. Lee, w-w-w-w-will speak to you, o-o-o-o-on a topic of vital importance. In using the thought bounce the stutterer is trained merely to think these repetitions in a sentence before he attempts to say the sound. The thought bounce may be used on single sounds or in connection with the phrasal bounce.

of the fact he has had a speech defect.'

Case 2. W. G., male, age 14. The case had been referred by a county health nurse, who notified us of the time he would report, but who was unable to come with him. In the first interview, he manifested marked hysteria, was unable to give his name, his home town, or the name of the person who sent him. His lips moved spasmodically, his face was flushed and perspiration covered his forehead. In the presence of an assistant, he was relaxed, hypnotized, and told that the words would come out easily. He then whispered his name, the name of his home town and his high school. For the two succeeding sessions on the following day, he was unable to talk except when hypnotized, and then he could only whisper. On the fourth day, he was able to talk in a clearly audible voice while under hypnosis and even told of his mother's death and of subsequent mistreatment and ridicule. On the eighth day, he carried out the post-hypnotic suggestion that he would talk 'easily' and 'comfortably' to a group of mothers. After this the case showed marked gain in confidence and began to joke and laugh with clinicians and associates in the clinic. In the third week, he talked 'easily' to a graduate class in abnormal psychology, both in the hypnotic trance and following it. He laughed and joked with them and said he had a good time visiting them.

When W. G. left the clinic at the end of seven weeks, he stuttered occasionally, but his speech was 'relaxed,' and his manner was direct.

Case 3. M. B., male, age 18. This case first reported with his father, who stated that 'everything' had been tried to check the stuttering and that he 'would beat hell out of the boy some more if it would do any good.' The boy manifested both clonic and tonic blocks, and found it very difficult to talk to a group of seventeen male stutterers in the clinic, but he rejected all attempts to teach him any modified pattern of speech, even after he had seen the 'improvement in control' the others were making. Attendance was irregular 'because of his being needed on his father's farm' and in two weeks he had made little or no improvement. He was first hypnotized three weeks after his first visit to the clinic, in the presence of Dr. Roy McCall. In the trance, after the suggestion that he could talk without fear of hesitancy, he talked with amazing fluency for twenty minutes. After being awakened, he agreed to undergo the same 'relaxation' before a graduate class in abnormal psychology, where he again talked for fifteen minutes with great fluency.

After being awakened he talked for twenty minutes, again with remarkable fluency, upon the same subject as he had discussed during the trance. The case reported to the clinic only once after this session, and stated with an occasional light block that 'he was sure he could talk well as long as he relaxed.' Unfortunately, no follow-up has been possible in this case.

Evaluation

ALTHOUGH it is not possible in this report to present certain quantitative data, particularly that drawn from the records of the psychometer, the observation that hypnosis greatly facilitates deep relaxation can be adequately supported. Everyone of the 35 subjects reported feeling greatly rested and relaxed 'deep inside.' Such reports as 'I never felt so limp,' 'I feel very good and relaxed' were spontaneously given by the subjects. Furthermore the relaxation persisted during subsequent performances in complex speech situations, if the unanimous reports of the subjects may be trusted. The method was of incalculable help in working with severe stutterers who had difficulty in mast-

ering 'more relaxed' patterns of stuttering such as the 'bounce,' 'whispered bounce,' 'phrasal bounce,' etc.

Both the hypnotic speech and post-hypnotic speech aided greatly in training the subjects in extensional evaluations of both their speech and the complexity of situations. Various writers (**5**, **15**) have reported that increasing complexity of speech or reading situations evokes or helps to evoke the disintegrative behavior observed in stutterers. However, everyone of the 31 stutterers, following hypnosis, could enter what were apparently very complex situations and speak 'easily' in a relaxed manner, 'without being disturbed by hesitancies while thinking of the right word.' By utilizing their experiences in post-hypnotic speech in conjunction with such devices as 'dating' and 'indexing,'[4] the subjects learned that 'complexity' does not inhere in a situation, as many writers tacitly assume, but in the individual's evaluations of the situation. Thus, Mirrophones, telephones, radio broadcasts, and speaking from an auditorium platform were discovered to be situations without that complexity which lead to disintegration. They found it difficult to continue to argue, as all of us have observed them to do, 'I *always* stutter over the phone,' 'Microphones frighten me so that I simply can't speak,' 'I simply can't give a public speech,' etc.

In stutterers in whom the symptoms of hysteria were marked, hypnosis was of incalcuable value in facilitating the necessary communication between subject and correctionist. Instead of requiring several weeks of slow torturous sessions to communicate certain attitudes, feelings and experiences to the correctionist, the stutterer while hypnotized could talk easily about even the most unpleasant experiences, mention of which in the waking state during the early course of the treatment was accompanied by severe blocks and even 'mutism.'

In the case of five of the subjects, certain data, which in the writer's opinion could not have been recalled without the aid of hypnosis, proved to be of great use in explaining to the stutterers a possible basis of their signal reactions to speech and to human beings.

The need for successful speech experiences, as a means of developing poise, assurance and ease, has been widely recognized during the last ten years by teachers of the Fundamentals courses as well as by speech correctionists. Consequently, various graded progressions of speech projects have been tried, although all workers generally recognize that a therapist's evaluation of complexity is frequently quite different from that of the subject. The writer has discovered no other method by which highly successful speech experiences can be so quickly given to a stutterer as by means of hypnotic and post-hypnotic speech. Furthermore, there appears to be a marked carry-over of confidence, relaxation, etc. into situations subsequent to the controlled ones. Such responses as 'Did I do that?' 'That couldn't have been me' followed by 'If I can be relaxed in a situation like that, I can be anywhere,' indicate the trend taken by the stutterers.

It is not the writer's intention to suggest that a miraculous 'cure' for stuttering lies in hypnosis. In respect to the values enumerated, however, the writer believes hypnosis to be a valuable adjunct to any system of therapy for stutterers.

[4]The devices of indexing and dating, along with other extensional devices, are described in the introduction to the second edition of *Science and Sanity*, pp. xxviii to xxx, and in *People in Quandaries*, Chapter 10. (References **8** and **11** in the bibliography at the end of this paper.)

Implications

THE HYPNOTIC and post-hypnotic speech of 'hysterical mutes' and stutterers raises a number of questions in respect to etiology, particularly with reference to those theories which rest upon inferences of inherent differences in the neurophysiological functions of stutterers. Since it can be clearly demonstrated that the hypnotic and post-hypnotic speech of stutterers is unusually rhythmic, free of blocks and tension, and since in a large number of cases, this freedom carries over in subsequent speech situations, can it be possible that by deep suggestion, the basal metabolism, or dominant gradient, or the biochemical function is altered? Or rather can it be possible that the evaluations which, because of their particular semantic environments, the stutterers have placed upon their speech, are of a pseudohypnotic type which induces stuttering, just as the suggestions of relaxed, easy speech in hypnosis induce relaxed, easy speech?

Whatever the answer to the questions above, the writer believes that fruitful areas of research lie in the direction of suggestion and hypnosis, and that these studies will supplement the already promising research of Johnson and his students in the semantics of stuttering.

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Infant Speech: Vowel And Consonant Frequency

Orvis C. Irwin
Han Piao Chen*

CURVES OF THE mastery of vowel and consonant types during infancy were published recently in this *Journal* (**1**). The purpose of the present article is to report an analysis of the frequency[1] of vowel and consonant utterance during the first 2.5 years of life, to indicate the equations derived from the data, and to present curves of development representative of the equations. A total of 1,622 records transcribed in the International Phonetic Alphabet from the spontaneous speech of 95 infants throughout a period of 2.5 years constitutes the data. Each record consists of sounds uttered on 30 breaths. The data are contained in the following table which includes the bimonthly means for vowels and consonants, the number of infants upon which the means are based, and the number of records available. The table should be read as follows: for the first two month period the number of infants is 62, the number of records is 125, the mean number of vowel frequencies is 49.0, of consonant frequencies, 11.3.

TABLE 1. Means of phoneme frequencies at successive ages.

Bimonthly Age Group	*Number of: Subjects*	*Records*	*Means for: Vowels*	*Consonants*
1-2	62	125	49.0	11.3
3-4	80	181	52.8	14.3
5-6	75	166	56.3	17.6
7-8	64	170	55.2	21.2
9-10	62	147	56.4	24.7
11-12	62	149	58.0	33.5
13-14	57	127	56.6	32.6
15-16	55	128	56.5	36.1
17-18	50	106	60.0	37.6
19-20	41	84	57.2	40.1
21-22	37	68	58.2	48.9
23-24	31	52	59.9	53.0
25-26	32	51	70.6	67.2
27-28	24	41	73.0	67.4
29-30	19	27	75.3	73.5

It was found necessary to divide the vowel frequency data into two parts. The first includes the first two years of life and the second the next six month period. The curve is shown in the first graph. The equation for the first portion is $V_F = .69\,A + 51.8$ which is represented by a straight line. The equation for the second part is $V_F = 11.78\,A^{2.5}$. This part of the curve approximates a parabolic arc. Both are satisfactory fits. The X^2 goodness of fit values are 0.576 ($P = .99$) for the straight line, and 0.186 ($P = .98$) for the curvelinear line. The smallness of X^2 values indicates the goodness of fit. It is of very considerable interest that at the beginning of the third year of life the rate of development of vowel frequency is no longer constant but becomes an abruptly changing rate.

The curve for the consonant frequency data is found in the next

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[1]The term *frequency* refers to the number of times a particular phoneme type occurs. *Type* is a term used to designate the different phonemes.

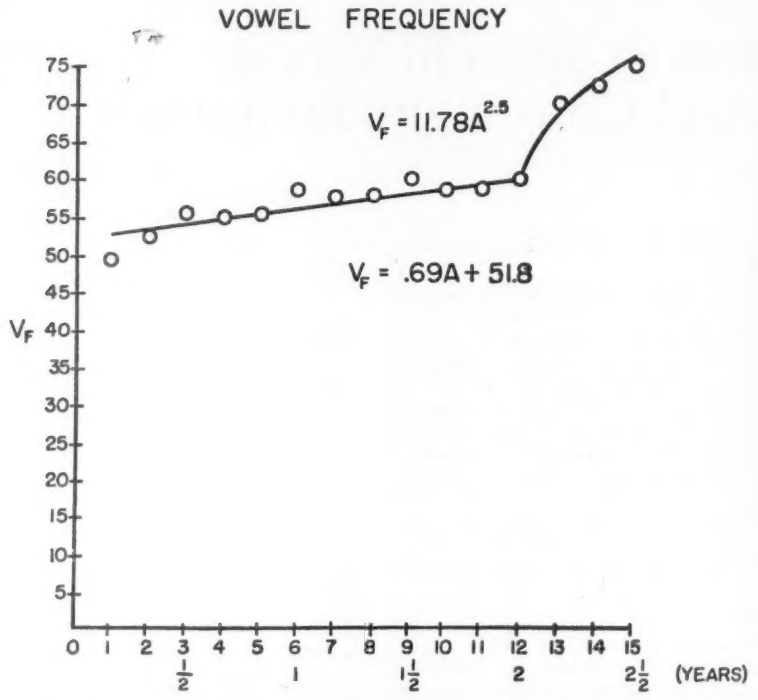

FIGURE 1. Curve with equations, for first 2.5 years of life, showing means of vowel frequencies for subjects represented in Table 1.

graph. An exponential curve whose equation is $C_F = 12.5\ e^{0.124\,A}$ has been found to be the best fit to these means. The X^2 value is 4.312 ($P = .99$).

A comparison of the two graphs reveals that throughout the first 30 months of life infants utter vowel sounds more frequently than consonant sounds. At the beginning of life vowel sounds occur about five times more frequently than consonants and not until 2.5 years does the frequency of occurrance of consonants approximate that of vowel sounds. Thus the rate of the curve for consonant frequency is greater than that for vowels. Moreover the curves reveal that the frequency or consonantal and vowel sounds develop in radically different ways.

An interesting comparison is that between the curve for vowel types reported previously (**1**), and the curve for vowel frequency. The former curve is parabolic while the latter is a composite curve the first part of which is linear and the last part of which is parabolic. There is also a contrast between the curve for consonant types (**1**) and consonant frequency. The first is parabolic whereas the second is exponential.

SUMMARY

THIS REPORT is concerned with the derivation of equations for vowel and consonant frequencies from data collected on 95 infants from

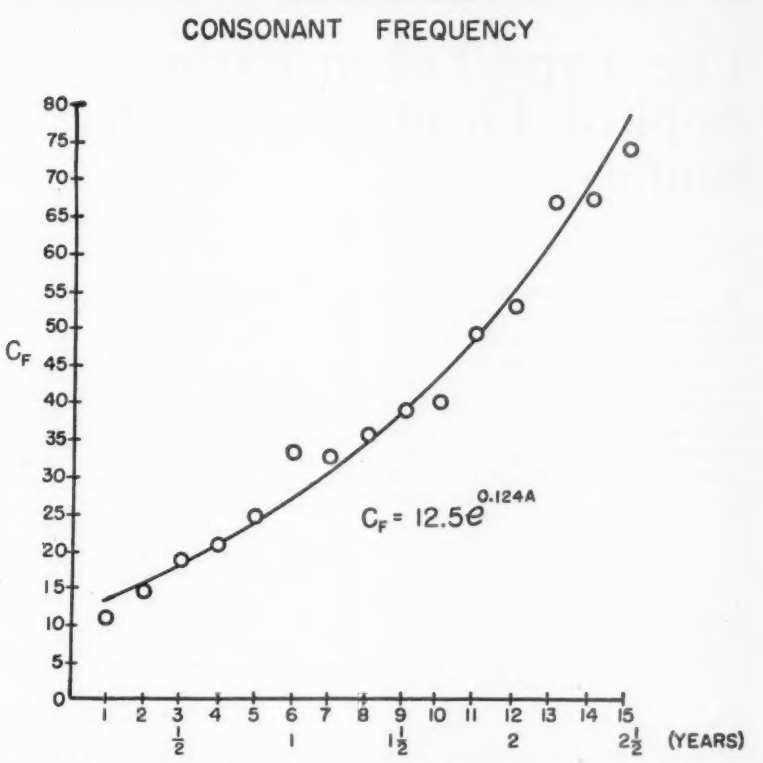

FIGURE 2. Curve with equations, showing means of consonant frequencies for subjects represented in Table 1.

birth to 2.5 years. The data consists of a total of 1,622 records of infant speech transcribed in the International Phonetic Alphabet. Two equations are needed to express vowel frequency development. The first which includes the first two years of life is $V_F = .69\,A + 51.8$. The second which includes the next six is $V_F = 11.78\,A^{2.5}$. The first curve is a straight line, the second approximates a parabolic arc. The theoretical curves which represent these equations are good fits. The equation derived from the means of consonant frequency is $C_F = 12.5\ e^{0.124\,A}$. This is an exponential curve. Throughout the first 30 months of life the frequency of vowel sounds exceeds consonant sounds. At the first bimonthly period vowel sounds occur about five times more frequently than consonants, and not until the last two month period are they approximately the same. The process of development for vowel and consonant frequency are radically different. It is reasonable to assume that these three equations express the laws of phonemic frequency development during infancy.

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The Type-Token Ratio Applied To Infant Speech Sounds

Han Piao Chen
Orvis C. Irwin

AN important problem in the analysis of infant speech sounds data is the use of appropriate indices. A number of indices are now available such as the phoneme type (**4**), phoneme frequency (**6**), vowel and consonant type and frequency (**2, 5**), the differential percentage index (**3**), consonant-vowel ratios (**7**), and the type-token ratio (**1**). The latter index which was originated by Johnson (**8**) has been adapted to some aspects of infant speech sound development.

The type-token ratio (TTR) is the relation between the number of different categories of phonemes (types) to the total number of speech sounds (token) in a given sample. Johnson (**8**) has called this the overall TTR. In our study we used a variation of this ratio called the segmental TTR which is obtained from a proportional segment of the samples.

In the references referred to above (**1**) only the first 50 sounds from each sample record were utilized and two segmental type-token ratios were calculated. One segmental type-token ratio was based on all 50 sounds. The other consisted of the mean of five segments of ten sounds each. The data were grouped also according to the age of the infant. An age level includes a two month period. For the period of the first year of life thus there are six age levels. It was found that the older the infant the higher is the value of the type-token ratio. This was true whether the size of the token was 10 or 50 sounds. The study also showed that the larger the size of the token, the smaller will be the mean type-token ratio. This result was found to hold for each of the six age levels of the first year.

IN the present report, the TTR was derived from the complete sample record instead of the first 50 consecutive sounds. The TTR's were obtained with the size of the token or segmental unit varying from 10 to 100 consecutive sounds. The actual size of the segments analysed are listed as follows: 10, 20, 30, 40, 50, 75, and 100. Accordingly, if a given infant has a sample record of 126 sounds, we would then have one mean TTR[1] derived from 12 TTR_{10}, one mean TTR_{20} derived from 6 TTR_{20}, one mean TTR_{30} obtained from 4 TTR_{30}, one mean TTR_{40} obtained from 3 TTR_{40}, one mean TTR_{50}, and one each for TTR_{75} and TTR_{100}. It may be noted that by using 10, 20, 30, or 40 sounds as the segmental unit, it is necessary to exclude the last six sounds from the above mentioned sample, because the remaining sounds are not sufficient to make up another segment. Moreover, it is necessary to discard the last 26 sounds from the sample when either 50 or 100 sounds are taken as the token, and to discard the last 51 sounds when using 75 as the token.

This situation constitutes a limitation of the segmental type-token ratio when it is calculated from samples of

[1]Since the TTR varies inversely with the size of the token, it is our policy to indicate the size of the token whenever TTR is given. Thus, TTR_{10} refers to a TTR obtained with 10 consecutive sounds as its token.

sounds which are not constant in size. Thus for the above mentioned sample, if 10, 20, 30, or 40 sounds constitute the segmental unit, TTR's were obtained from 120 of the total 126 sounds. When the size of the token was 50, 75, or 100 sounds only 100, 75, and 100 sounds were used up. It would be, of course, more appropriate to secure 600 sounds for each sample record. Since 600 is the common denominator of the segmental sizes it would then, enable us to obtain one mean each from 60 TTR_{10}, 30 TTR_{20}, 20 TTR_{30}, 15 TTR_{40}, 12 TTR_{50}, 8 TTR_{75}, and 6 TTR_{100}. However, the special technique adopted for the present study (1) had to consider other factors and prevented us from securing an equal number of sounds for each sample record. Moreover it would require a considerable amount of time and effort especially with young infants to record 600 sounds at every visit to an infant. Therefore we have had to be contented with an analysis of as much of our data as possible for the derivation of the type-token ratios. However, as will be seen, the results of the present analysis are quite satisfactory.

To state the problem specifically, it was intended (1) to study the relationship between the type-token ratio and the age of the infant, (2) to study the relationship between the type-token ratio and the size of the segmental unit or token, and (3) to show the interrelationships among the three variables studied, that is, the type-token ratio, the age of the infant, and the size of the token.

The data analysed were based upon the speech sound samples obtained from infants of twelve months old and under. They were further subdivided into six age levels with a two month period as a level. The number of infants for each age level from the younger to the older group were 62, 80, 75, 64, and 62 respectively. All the infants appeared to be normal according to their birth records. No signs of physical handicaps were apparent. The occupations of their parents ranged from laborers and skilled worker to university professor, physician, and lawyer. On the whole, the sample was slightly above average so far as socio-economic status was concerned.

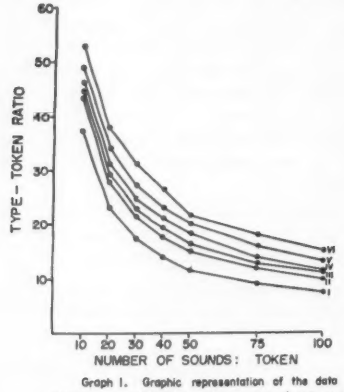
Table 1 shows the mean type-token ratios obtained from various sizes of tokens at various age levels.

TABLE 1. Interrelationships among type-token ratios, size of token, and age levels of the infant.

	Age levels (bi-monthly)					
Size of Token	*I*	*II*	*III*	*IV*	*V*	*VI*
10	37.34	43.56	44.79	46.21	49.11	52.97
20	23.57	28.16	29.59	31.72	34.26	37.86
30	17.49	31.47	22.90	24.87	27.22	31.04
40	14.22	17.77	19.42	21.25	23.17	26.26
50	11.76	15.25	16.44	18.25	20.21	22.78
75	9.12	12.19	13.04	14.16	16.07	18.24
100	7.52	10.00	11.39	11.71	13.52	15.42

The table should be read as follows: at age level I (i.e., 1-2 months) the mean type-token ratio with 10 sounds as the segmental unit was 37.34; and the same measure was 11.76 when the size of the token was 50 sounds. Since all the type-token ratios were expressed in terms of percentage, a TTR_{10} of 37.34, then, would actually mean that there were on the average 3.734 different types of phonemes in every 10-sound segment. In the same manner, a TTR_{50} of 11.76 would mean that there were, on the average, 5.688 different types of phonemes for each 50 sound segment.

The relationship between the type-token ratio and the size of token or segmental unit is shown in Graph 1. Each curve represents the type-token ratios obtained from various sizes of tokens at a given age level. It is noteworthy that at any given age level the smaller the size of segmental unit the higher the numerical value of the mean type-token ratio. This con-



Graph 1. Graphic representation of the data showing the relationship between size of token and type-token ratio. Each curve represents the results obtained from a given age level.

clusion holds for all the six age groups studied. The graph also shows that the general form of the curve is very much the same type for various age groups, provided, of course, the comparisons are based upon the same size of the token.

Graph 2 shows the development of type-token ratios at various age levels. Here, each curve represents the ratio obtained from a given size of segmental unit, for various age groups. It is observed that for any given size of token the mean ratio tends to increase as the infants become older and older. All seven curves show great similarity in form, although the ratios obtained from the smaller sized tokens are higher in numerical value.

To summarize, the curves of Graph I show that the TTR decreases in value with increase in the size of the token, whereas the curves in Graph 2 show that it increases with the age of the infant.

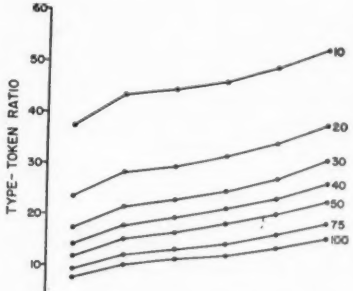
Since the type-token ratio is a function of both the size of the token and the age of the subject, it seems pertinent to tie these two graphs together into one integrated view by a three-dimensional representation. This surface appears as Graph 3. The constituent points in Graphs 1 and 2 were shown in Graph 3 and smoothed curves were then drawn according to the patterns of these points revealing the interrelationships among the three variables.

The problem of interest here is that by means of the three-dimensional graph it is possible to estimate the TTR for infant speech sounds in terms of any size of token within the limits of 10 and 100 sounds at any age under one year.

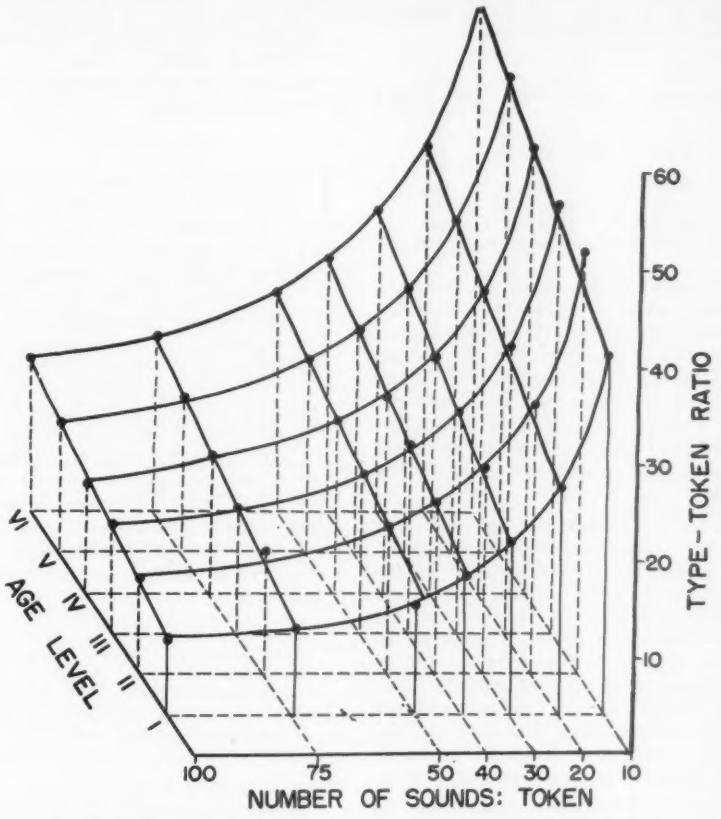
In order to test this hypothesis, the values of TTR_{25} at each age level were obtained by the method of interpolation from Graph 3. In addition, the original data were reanalysed and the two sets of values, that is, the readings from the curves and the values from the data, were compared. The results are shown in Table 2.

The TTR_{25}'s intended for the test of our hypothesis as stated above were calculated from the first 50 sounds of each sample. This procedure is justified by a previous finding (**1**) that the first 50 sounds yielded a value practically identical with that obtained from the complete sample.

The table shows that at the first two month period the mean type-token ratio with 25 sounds as its segmental unit was found to be 19.92 by actual



Graph 2. Graphic representation of the data showing the relationship between age level and type-token ratio. Each curve represents the results obtained from a given size of token.



Graph 3. Three dimensionsonal graph representing the fitted 'surface' relating type-token ratio jointly to size of token and to age level.

calculation from the data. By the graphic method, the same measure was found to be 20 which differed only .08 from the empirical value. The differences in other sets of values also were found to be negligible. They ranged from .06 to .37. Thus the graphic method of finding TTRs for infants' speech sounds turns out to be highly accurate.

In order to clarify the meaning of this three-dimensional graph an explanation of the details of its construction and some directions for its use will be given. It is constructed in two parts. The floor of the graph is a two-dimensional system of coordinates in which the angle of the quadrant is represented by an obtuse rather than a right angle. The number of sounds or tokens are laid off on the x axis, and the age levels for the first year of life are laid off on the y axis. The second part consists of a curved surface or roof raised above the first surface at vertical distances which

TABLE 2. Comparison of TTR_{35} obtained from data and that from graph.

Age in months	*TTR_{35} from data*	*TTR_{35} from graph*
1-2	19.92	20
3-4	24.12	24
5-6	25.63	26
7-8	27.68	28
9-10	29.94	30
11-12	33.64	34

correspond to the values of the type-token ratios. A scale by which the vertical distances may be measured is provided at the right of the graph. It is divided into equal units. Thus the perpendicular distances between the floor and the roof of the graph yield the ratios. Several examples are given to illustrate the use of the graph.

Case 1. Suppose the age level of a given infant is VI and its token of sounds is 100. What will be the type-token ratio? First, the point where 100 and VI intersect on the floor surface is found. The perpendicular drawn at this point terminates at a point in the curved surface. Then the length of this line is measured by a ruler against the scale at the right. This value is found to be 15 and is that infant's type token ratio.

Case 2. This is the case where an interpolation is desired. An infant's age level is 2½ and his token of sounds is 75. What is the ratio? As in the preceding case the point at which the token line and age level line intersect is found with caliper or ruler. The perpendicular at this point is followed to its terminus in the curved surface. The distance of this line is measured in terms of the scale units. The resulting value is the type-token ratio for that child.

Caution must be observed when interpolating. The terminus of the perpendicular upon the curved surface may not fall exactly upon one of the curved lines shown in the graph. It is therefore necessary to determine the distances between these lines in establishing exactly the terminal point of the perpendicular.

SUMMARY

THE type-token ratios of infants under one year of age are presented in relation to the size of the token and to the age of the infant. A three-dimensional graph showing the interrelationships of the three variable, type-token ratio, age and size of token is given. A description of the construction of the graph and directions for its use are outlined. In order to test the validity of readings from the graph they have been compared with corresponding values calculated from an analysis of the data. It was found that the differences between values derived from the curves and those calculated from the empirical data are negligible.

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Metropolitan Speech Correction

Berneice Rutherford
Lillian Read
Myfanwy Chapman*

THIS questionnaire study was made to discover how cities having a population of 100,000 or over are meeting the problems of speech correction. Investigation was made of size of school population in relation to speech correction service, financial administration and teaching personnel.

PROCEDURE

THE FOLLOWING questionnaire regarding speech service was sent to 82 cities of 100,000 or more population according to the 1940 census. One city, Des Moines, Iowa, with a population of about 98,000 was included in the study. Replies were received from 55 cities. Twelve of the 55 returns were incomplete, or stated that there were no speech correction classes in their cities. This study was based, therefore, upon information from 43 returns.

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The Questionnaire

We are interested in learning how cities in the same class as Minneapolis are meeting their problems in speech correction. May we ask your cooperation in seeing that the following questionnaire is answered and returned to us at the earliest possible date? Check questions where indicated. Please answer *all* questions.

1. Number of teachers in speech correction.....
2. What professional training is required of speech teacher? Degree in Speech Pathology..... Incidental Speech Training.....
3. What is the school population?
   Elementary..... Junior High.....
   Senior High.....
4. How many or what percentage of school population needs help in speech correction? Elementary..... Junior High..... Senior High.....
5. How many or what percentages are receiving help? Elementary..... Junior High..... Senior High.....
6. How often is speech correction service given? Elementary-daily..... Junior High-daily..... Senior High-daily.....
   Bi-weekly..... Bi-weekly..... Bi-weekly.....
7. What is the determining factor for placement in speech correction classes?
   Severity of speech disorder..... Volume of cases in building.....
8. How are the speech needs of school population determined?
   Survey by teacher of speech correction.....
   Referral by classroom teacher.....
   Referral by others.....
9. At what level is speech correction given?
   Elementary..... Junior High.....
   Senior High.....
10. What is the organization of speech classes?
    Itinerant teacher plan..... Speech Center plan..... Other plan.....
11. Is speech correction work
    Individual..... Group..... Other.....

12. What is elementary classroom teacher load?.....
13. Do you feel your present set-up meets your speech correction needs?
Yes..... No.....
14. Is state aid allowed for speech correction service?
Yes..... No..... Amount.....
15. How distributed?
Per capita..... Per teacher.....
Per class..... Other.....

Findings

SCHOOL population, as shown in Table 1, ranged from one school system of 8,000 to one of 837,853. The median school population was between 30,000 and 40,000. The ratio of school population to the number of speech clinicians (Table 2) ranged from 3,000 to one, to 55,000 to one. The median was 9,000 to one.

TABLE 1. School population of cities reporting.

School Population	*No. of Cities*
400,000 and over	1
100,000–399,999	5
40,000–99,999	14
20,000–39,999	15
5,000–19,999	8
TOTAL	43

TABLE 2. Ratio of school population to number of speech clinicians.

Ratio of School Population to Each Speech Clinician	*No. of Cities*
50,000 and over	3
25,000–49,999	3
13,000–24,999	11
7,000–12,999	11
3,000– 6,999	12
TOTAL	40

Classroom Teacher Load

Twenty-seven cities reported on the classroom teacher load. These loads ranged from a minimum of 25 pupils to a minimum of 44 (Table 4). No information was available as to how cities computed their average classroom loads. There was no apparent relationship between the number of speech clinicians and the average classroom teacher's load.

The Number of Speech Cases

The percentage of speech cases in the elementary and senior high school population ranged from 2 to 12 per cent and in the junior high school from 2 to 11 per cent. A wide variation was reported in the method of determining the number of cases needing speech correction. Clinical survey by the speech clinician, referral by classroom teachers, a combination of these two methods, and referral by others such as the principal, parents, other children, school hygienist, psychological laboratory, medical profession and other agencies were used in determining the number of speech defects. The percentage of school population receiving speech correction ranged from zero to twelve in the elementary school, zero to two in the junior high school, and zero to five in the senior high school.

Adequacy of Service

The ratio of school population to the number of speech clinicians ranged from 3,000 to one to 55,000 to one (Table 2).

State Aid

Approximately as many cities established speech classes without state aid as with state aid.

Levels of Service

Most commonly the speech correction program was confined to the elementary school only, or was found in all three levels, elementary, junior high and senior high school (Table 3). Reports of 39 cities showed that 16 had service in the elementary, junior and senior high school; 14 in the elementary only. Thirty-three reported that their programs were inadequate. The tendency in the sys-

TABLE 3. Ratio of school population to each speech clinician according to place and adequacy of service.

Ratio of School Population to Each Speech Clinician	Place of Service					Adequacy	
	Elem. only	Jr. H. S. only	Elem. and Jr. H. S.	Elem. and Sr. H. S.	Elem. Jr. and Sr. H. S.	Yes	No.
30,000–59,999	2			2	1		5
10,000–29,999	7	1	2		5	2	13
2,000– 9,999	5		1	3	10	4	15
TOTAL	14	1	3	5	16	6	33

TABLE 4. Ratio of school population to each speech clinician in relation to classroom teacher load.

Ratio of School Population to Each Speech Clinician	Classroom Teacher Load			
	25–29	30–34	35–39	40–44
40,000 and over			2	
20,000–39,999	1	3	3	
10,000–19,999		2	2	2
2,000– 9,997	1	3	4	4
TOTAL	2	8	11	6

TABLE 5. Preparation requirements for speech clinicians.

Ratio of School Population to Each Speech Clinician	Degree in Speech Pathology	Special Speech Training	No Requirements
30,000 and over	3		1
20,000–29,999	3	2	1
12,000–19,999	3	5	
6,000–11,999	9	4	
2,000– 5,999	2	5	1
TOTAL	20	16	3

tems giving service at all levels was to cluster between 6,000 to one and 10,000 to one in the ratio of the school population to the number of speech clinicians. The size of the school population was not a determining factor in relation to the placement of children in the speech correction program.

Frequency of Service

Semi-weekly service seemed to be the tendency.

Organization

Itinerant teacher plan, rather than center plan, was in use in a majority of cities.

Placement

Severity of the disorder, and a combination of severity and volume of cases needing help, were the bases for placement of children in speech correction classes in 37 out of 39 cities.

Organization

Thirty-three of 41 cities reported a combination of group and individual organization plans of instruction.

Adequacy

Inadequacy rather than adequacy seemed to be the tendency in all phases of the speech correction service, as reported, but there was some indication that the service was more adequate in those schools in which the ratio of school population to number of speech clinicians was lower.

Training

Reports of professional training for speech clinicians showed a variation from 7.5 per cent with no specialized requirements to 50 per cent requiring a degree in speech pathology.

Summary

RETURNS FROM 43 Metropolitan school systems indicated that:

1. The lower the ratio of the school population to the number of speech clinicians, the more adequate the speech correction service.

2. The itinerant teacher plan and semi-weekly service in elementary schools were typical patterns, and did not seem to be related to adequacy of service.

3. As a general rule, there was inadequacy of service. The number of pupils needing help far exceeded the number receiving help.

4. A combined clinical survey and classroom teacher referral, or a combination of referral from many sources, with a combination of group and individual organization of classes, were typical patterns of procedure.

5. Speech correction service was given to about 2 per cent of the elementary school population. Some cities reported speech work in the junior and senior high schools.

6. Speech clinicians in most cities were required to have either specialized training or a degree in speech pathology.

7. The questionnaire method of study allows, of course, for variation of interpretation, due particularly to differences of training in speech pathology and lack of standardization of judgments of the persons answering the questionnaire, and the results as reported here are to be evaluated accordingly.

Editorial Note

During the recent coal strike the printer was able to operate only 24 hours a week. Under such conditions, it is hardly possible to meet printing deadlines. The delay in publication of this issue of the *Journal* has been minimized through the fine cooperation of the publisher. Under the circumstances, such delay as has been unavoidable will, I trust, be understood by the readers.

—The Editor.

Is Is Not the Verb for Aphasia

Jeanette O. Anderson*

TWO PAPERS have been presented (**1**, **2**). In the first an attempt was made to evolve a speech pathologist's working concept of aphasias. In the second a comparative discussion of eighteen cases of aphasia was undertaken in terms of the evolved concept. This third article presents inferences drawn from a study of these eighteen cases and others studied during the past three years in an attempt to indicate general testing and therapeutic techniques helpful to the speech pathologist in outlining rehabilitory measures for aphasic patients.

Since the clinical and linguistic manifestations of these eighteen cases are so different (**2**), only inferences, rather than conclusions, may be drawn from a study of them and their case histories. Because these patients do exhibit clear-cut aphasic manifestations, it seems probable that the several observations made concerning this group of cases may hold true for aphasics or groups of aphasics of which these may be representative. The inferences that may be drawn from this study support Yacorzynski's (**9**, 353) postulation that 'For the problem of re-education in the field of speech pathology one conclusion is clearly indicated, that possibly the re-education of aphasics will eventually require an emphasis on the mechanisms which underlie the production of speech, and not, or to a lesser extent, on training in speech itself.'

Nielsen's (**6**, 107) position concerning the potential capacity of major and minor cerebral hemispheres also seems to be borne out by the evidence. He says, 'While there is a hereditary determinant to make a certain hemisphere the major one, there is no essential difference between the functional capacity of major and minor hemispheres at birth . . . . Whenever a minor hemisphere is called upon to take over a function it at first fatigues with astonishing rapidity. As it becomes trained, it develops endurance rather than specific capacity.'

In considering these inferences for their practical application in the retraining of an aphasic, perhaps the most important factor to keep in mind is Backus' (**3**, 46-47) restatement of Yacorzynski's tenet: ' . . . the process of rehabilitation must itself be part of the reality of living for the patient . . . . he will not wait to live while those powers of implicit and explicit verbalization are growing again in the months of re-education.'

Speech is not an end in itself. It is a means to the many ends of human adjustment. Words have come to be important because, as Mrs. Miniver (**7**,24) phrases it, 'Words are the only net to catch a mood, the only sure weapon against oblivion.' The aphasic does not need to re-learn speech *per se;* he does want and need to re-learn speech as a medium of adjustment in the modern word-world. That he must live in such a world may be deplorable (**5**, 23-36); that is a moot question. Since he does live in such a world, he needs symbols, not for their intrinsic value, but for their trade-in value.

CERTAIN inferences would appear to be basic to an effective understanding of aphasia from the speech pathologist's point of view:

A. Inferences concerning the nature of aphasia:

1. The adult aphasic patient suf-

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fers an emotional aberration that interferes with what language abilities he has. This breakdown of morale tends to inhibit language in an individual who is adult in all except linguistic functions and who is able, moreover, to compare his present linguistic failures with his past achievements.

2. Aphasia in children is more difficult to detect than in adults, and aphasic children are more difficult subjects for diagnostic tests than are aphasic adults.

3. A glosso-apraxia was present and persisted in six of eleven adult aphasics who exhibited marked difficulty with overt speech.

4. Contrary to traditional opinion, the first language learned is not always the least impaired nor the first regained in aphasic disturbances.

B. Inferences concerning the classification of aphasia:

1. Aphasic cases, if they are to be classified, must be placed in arbitrary, but not mutually exclusive, groupings. Although two or more cases may exhibit similar manifestations, repeated examination reveals that few of these apparently similar cases are wholly identical.

2. More accurate descriptive terms than 'expressive' and 'receptive' are needed to characterize aphasic cases adequately. Amnesic aphasia, too, should be designated in terms of quantitative and qualitative language residuum.

C. Inference concerning the pathology of aphasia:

1. A break in any part of the cerebral linguistic mechanism seems to affect the entire mechanism; this affection varies from one indivdual to another.

D. Inferences concerning speech therapy for aphasic patients:

1. If examination reveals normal development except in linguistic function, training in speech may be started successfully with aphasic children when the child is about three years old.

2. Education or re-education in speech may be started successfully only after some spontaneous attempt has been made at overt expression, oral or otherwise.

3. A fundamental part of speech therapy with aphasic patients is morale-building. It is one of the therapist's jobs to make the patient willing to start his linguistic rehabilitation where a child starts and to see his linguistic successes and failures in their proper perspective.

4. There are six stages in a child's linguistic development: undifferentiated crying, differentiated crying, babbling, lallation, echolalia, and verbal utterance. The last four of these stages can be used effectively as therapeutic devices in teaching aphasic children and in retraining aphasic adults.

5. Phonics and nonsense syllables, when incorporated into this developmental technique of training and retraining, are successful therapeutic devices in the speech therapy of aphasic individuals.

6. In the speech retraining of aphasic patients, the simultaneous strengthening of many pathways seems to reinforce each of them and to contribute to those of speech; hence, in such training:

   a. The use of concomitant sensory stimuli is helpful.
   b. Corollary motor activities are helpful in stimulating overt speech.

7. Those patients who have been familiar with written or printed linguistic symbols tend to respond orally more quickly and accurately to these symbols than to the corresponding real or pictured objects.

E. Inferences concerning the results

of speech therapy with aphasic patients:

1. Without formal t r a i n i n g in speech some restitution of function tends to occur in aphasic patients.

2. After the first few l e s s o n periods, speech therapy seems to contribute to increased emotional stability in aphasic patients.

3. Success of retraining in speech seems proportional to:

   a. Active cooperation of the patient.
   b. Former t r a i n i n g of the patient.
   c. The patient's morale.
   d. Resolution of economic, personal and social problems attributable to the patient's illness and residual disabilities.

4. Although a short i n t e n s i v e period of speech therapy is valuable for motivating speech and for re-establishing some linguistic habits, training over a longer period of time is more successful in enabling the patient to use voluntary speech. Formal re-education for a period of five or six years has value for mature aphasic patients.

F. Inferences concerning a concept of aphasia:

1. There seems to be no universally satisfactory classification of aphasia.

2. A study of aphasia made from a single point of view is incomplete.

3. There appears to be a general language zone in the brain within which several specialized areas for more or less specific linguistic functions may be designated.

4. The concept of aphasia as a basic disorder that may exhibit any combination of several aphasic manifestations seems useful for the speech pathologist.

STUDENTS OF APHASIA, it is apparent, still cannot write as did John Benson (**4**, 9) in his 1640 edition of Shakespearean sonnets: 'In your perusall you shall finde them Seren, cleere and eligantly plaine, such gentle straines as shall recreate and not perplexe your braine, no intricate or cloudy stuffe to puzzell intellect.' There remains in this field much 'cloudy stuffe' to puzzle intellect. Only a few truths are emerging and these can scarcely be described as serene, clear, or elegantly plain. It is true, however, that a few general observations may be made concerning diagnostic and therapeutic techniques that have been found most effective with aphasic patients:

A. Any series of tests can serve only as a guide; testing procedures must be adapted to each patient in terms of his abilities and disabilities estimated after discriminating analyses of errors and successes on each test as it is given.

B. Ordinary tests of linguistic activities cannot be used successfully in the examination of aphasic patients for the purpose of estimating re-educability.

C. Skills depending upon the re-learning or re-routing of motor patterns seem to be regained more easily than skills dependent upon sensory patterns.

D. Motivation is strongest and progress most sure when therapeutic techniques are adapted to the patient's greatest interests and to his usual activities.

E. The patient will usually possess one ability relatively stronger than his others; if this can be used as a leading device in arranging therapeutic methods, response to other stimuli seems to be strengthened and progress may be expected to be more rapid and sure.

F. The most important single cause of success or failure in the linguistic

re-training of aphasic patients is personal potential or the 'x-factor' (**8**, xii).

IN HIS NEED to see not only the hole in, but also the whole of, an aphasic patient's linguistic functioning, the speech pathologist faces a threefold task: he must discover whatever linguistic potential remains with the patient; he must evaluate this potential in terms of re-education in speech; he must plan to use this residuum most efficiently in speech therapy adapted to each individual.

The speech pathologist has only a noun: aphasia. Now, he needs to find a verb to go with his noun. And that verb is not *is*!

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LIMITS OF COMMUNICATION

When we say "Shut the door" or "If you wait, you shall have a dime" our aim is not to communicate our desire or intention but to secure certain behavior. What we really do communicate is not at all our own state of mind, our desire or intention, nor is there any reason why we should. Of course in the strict sense we could not communicate it if we would; we cannot pass on our inner states as they are. If anything is communicated, if the boy thinks about our thoughts at all, he would think, not "*I* want the door shut" but "*He* wants the door shut," not *'I'll* give him a dime if *he* waits" but "*He* intends to give *me* a dime if *I* wait." Moreover, in the case of almost every declaratory sentence what is "communicated" is not the speaker's own mental state. For instance, I say, "I feel cold and hungry and sleepy." "John was very angry with me yesterday." "It is raining." In the first case I speak not to make you cold or hungry or sleepy but to arouse sympathy or pardon. In the second, I speak not to duplicate in you my memory or even to inform you about it, but to inform you about John's feeling or behavior. In the third case similarly I wish you to be aware, not that a certain perception is occurring in me, but that a certain event is occurring in nature.

All this is perhaps too obvious to be mentioned, but I very much fear that devotion to the egocentric theory of language would have led some of you to evade the countless cases of disparity between the mental state causing a speech and the mental state resulting in the person spoken to if concrete cases of it were not given.

EDWARD LEE THORNDIKE, *Man and His Works* (Harvard University Press, 1943), 61, 62.

Comments On Testing Aphasics In the Speech Clinic

Clarence T. Simon*

THIS PAPER consists literally of a series of comments on certain principles in testing and handling aphasia cases in our speech clinics. During recent years there has been a distinct evolution in the concept of the disorder; an evolution increasingly favorable to speech re-education. Fortunately, the structuralistic tradition fathered by Gall and carried on by Broca, Bastian, Wernicke and others has been yielding to the more functional concepts begun by Flourens and continued so ably by Charcot, Jackson and Goldstein. When aphasia is viewed in accord with the modern thinking current in the natural and biological sciences, the speech therapist comes into his own. But there seems to be a gap between the modern concepts of aphasia and our actual testing and remedial procedures; and a very much larger gap between our concepts and our publication.

Frequently we hear aphasia defined as a language loss. This is an inadequate definition, of course, for there are personality changes, emotional deviations and variations in non-language behaviors which are significant in the total picture of the aphasic.

But even when we consider the language area only, our definition of that word *'loss'* is important. More accurately we should say that the aphasic presents a *disturbance,* or a change, of his language behaviors. He still has a language process; he still uses language activities. He performs these language activities, however, in more primitive and roundabout ways. It is true that many times he cannot use conventional abstractions and symbols, nor can he employ the short cuts which we call thinking. Verbalizations may be reduced to a few words (not uncommonly of the 'asbestos' variety), but the accompanying gestures, facial expressions and muscular tensions constitute a definite language activity. Unable to use the ordinary symbols and to confine his language behaviors to the small muscles, the aphasic relies on larger and more diffuse movements and more primitive symbolization. He still indulges in language behaviors which are very real and meaningful to him.

The speech therapist by understanding this individual language process can stimulate it by every possible means. As this language process is stimulated more and more, it dominates and integrates undamaged neural structures to make them subserve the function of language, and the aphasic improves his techniques of communication.

THE STUDY of this remaining language process provides the approach for both testing and therapy. There need be no attempt to discover and announce a locus of the lesion. We are studying and working with a disturbed but existing process, and not with a hypothetical point of injury. The only information, therefore, the speech therapist needs from the neurologist concerns the general medical condition of the patient and, most important, a judgment whether the condition is static or progressive.

If we attempt to follow the doctrines of the localizationists, we make a structuralistic approach which yields too few satisfactory results in both testing and treatment. We cannot

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guide an adequate program on the assumption that the lesion is located in Broca's, Wernicke's, or any other area.

As speech correctionists, we must study the language behavior as a total process. This means we must do our testing in terms of these specific performances and should not be concerned with an arbitrary classification of 'types.' Any attempt to classify the aphasics as sensory, motor, or mixed, or as verbal, syntactical, nominal or semantic, or in terms of any other conventional grouping, restricts and handicaps our study of the actual existing language processes of the aphasic. None of our cases ever falls into any of these categories; they must be forced in. And the attempt so to classify leads to an incomplete and biased study of the patient.

Now as a matter of fact, I doubt that many of our workers actually are building remedial programs on the basis of these conventionial classifications; it's just too hard to do it. But we still talk and write in these terms, and all too frequently we test in order to determine classification, instead of studying the language process of the patient. And we do seem to get a strange sense of accomplishment from putting the aphasic into a category, even though we have to skew his case to make him fit and the category gives us no information concerning remedial procedure. If we could just forget classification and test on a purely functional basis, we would work more efficiently.

SPECIFICALLY, in testing our cases, we have in mind four major items. Whether we use Head's tests, or the Chesher tests, or our own, we should be studying the patient to determine four major items.

First, we want to know *what the patient can do.* This certainly is as important as what he cannot do, for it serves as a basis for the remedial program. We need to work always from ability to disability, from what he can do to what he cannot do. Yet, by and large, our case reports contain only the things the patient cannot do.

In the *second* place, we need to know *what he cannot do*—not in terms of any classification, but in terms of the specific tasks he cannot perform. One aphasic can copy, either in long hand or on the typewriter, any printed or script material, but he cannot read it aloud or get any meaning from it. Another can read material set in type and get meaning from it, but cannot read or comprehend the same text written even in the best Spencerian handwriting. Still another can obey rather complicated instructions presented in either typed or script form, but can neither read them aloud nor tell you what they mean. Yet another can carry on a normal conversation, can perform the simpler arithmetical processes with paper and pencil, but can write only with many misspellings and read laboriously only.

We must test for specific inabilities, and the proper expression of test results is a *profile* and not a category or a classification.

Third, we should know the *things the patient needs most* to meet his immediate economic and social demands. Practice work must be related to the things he needs. The profile of his existing language process is tied directly to the chart of his needs.

Fourth, we need to gather enough *case history material* to answer the following questions: (1) Is the difficulty static or progressive? If the original cause of the lesion remains, obviously prognosis is unfavorable and there may be serious question of the wisdom of remedial instruction. (2) What was the patient's intellectual ability and success in life prior to the trauma? The greater his ability and his success in life, the better the

prognosis. (3) How far is he from his useful learning habits? Obviously, a patient who was constantly learning new things up to the time of the lesion has a better chance than the one who has lived on routine habits for many years. (4) What are the emotional drives, the determination and the stability of the patient? Again, the greater the drive and determination, the more favorable the prognosis. (5) What are the losses in motor skills which interfere with the mechanical performance of certain aspects of the language process? If there is no paralyses to interfere with writing and articulatory movements, progress should be more rapid and satisfactory.

THIS PAPER has attempted to make certain comments on the problem of testing aphasics. In essence, it has suggested that information concerning the locus of the lesion, however valuable it is to the neurologist and particularly to the neurosurgeon, is of no value to the speech correctionist. It has stated rather flatly that there is no basis in clinical data for the conventional classification of types of aphasia and that any attempt to put our patients into these categories or to guide our testing and remedial programs on the basis of them militates against substantial results. It has attempted to point out that the specific reason for testing is to discover the specific abilities and disabilities in the patient's existing language process. And last, the best therapy uses the patient's abilities as a basis for training in those skills he needs most for his immediate social and economic demands.

GETTING WHAT WE WANT

Why do all of us develop language behavior? The development is necessary because without language people cannot function. . . . People acquire language because culture—any culture—that has endured for centuries is now so complex that as soon as one can he must begin to live in an unreal world, unreal because it is shot through with subtle evaluations.

Fairly early . . . one has to operate with the term "I." . . . We learn quite early in life that our parents can always *refer* to themeselves, and we learn to refer to ourselves. Thus begins the development of that system of experience which we call the "self system," the organization of successful tricks, mostly linguistic, by which we conciliate others and get as much satisfaction as we can.

Throughout life, language is largely an instrumentality for getting what we want. As we live with other human beings, we are creatures of culture; and as linguistic culture is the most amazing of all cultural ingredients, linguistic symbols—speech—are very important instrumentalities in our getting what we want. So inadequate is the structure of our culture to our needs that language operations have to pertain not only to obtaining what we want, but also to saving us from experiences, both real and imaginary, which we do not want.

Getting what we want is, generically, securing satisfaction; avoiding what we do not want is the preservation of or feeling of personal security. Most children learn to use language more to preserve security than to secure satisfaction.

HARRY STACK SULLIVAN in *Language and Thought in Schizophrenia,* edited by J. S. KASANIN (University of California Press, 1944), 4-6.

News and Announcements

Miriam D. Pauls, Editor*

This spring, Dr. and Mrs. A. W. G. Ewing, of the University of Manchester, are lecturing and visiting schools for the deaf in the United States and Canada. They are two of the outstanding authorities on the education of the deaf and have made significant contributions to the field. Individually and collectively they are the authors of several important books, notably, *The Handicap of Deafness, Aphasia in Children,* and *Lipreading and Hearing Aids.*

In 1942 they were jointly awarded the Norman Gamble Prize of the Royal Society of Medicine for original investigations on the sense of hearing. In 1943 they shared a similar honor when they received the Actonian Prize of the Royal Institute for research into the problems of deafness. In 1944 Mrs. Ewing was a participant in the King's 'Birthday Honors,' being appointed officer of the Order of the British Empire.

The Eastern Public Speaking Conference was held at the Hotel New Yorker, April 26 and 27. This was the first meeting since 1942 of the oldest regional speech conference. There was a general symposium for all speech teachers on 'What has the war taught us?' Various sectional meetings were held on Discussion and Debate, Rhetoric and Public Speaking, Dramatics, Speech Correction, Radio, Voice and Diction, and Oral Interpretation.

The New York League for Speech Improvement met with the Conference on Saturday afternoon. At this session Lt. (jg) William G. Hardy, Director of Non-Medical Services, Hearing and Speech Rehabilitation Unit, U.S. Naval Hospital, Philadelphia, spoke on 'Service-Connected Speech Disorders and their Treatment in Service Centers.' This was followed by a talk on 'Postwar Problems in the Treatment of Service-Connected Speech Disorders' by Dr. Herbert Koepp-Baker, Professor of Speech and Director of the Speech and Hearing Clinic, Pennsylvania State College. Bell Telephone Laboratories gave a demonstration of 'Visible Speech.'

Early in January the Chicago Society for the Hard of Hearing started a class for mothers of deaf and hard of hearing children of preschool age. The object is to offer practical advice to mothers so that they may be able more intelligently to help in the training of their children at home. Dr. Jean Utley, who has a private practice in hearing and speech problems in Chicago, has volunteered her services. It is a very interesting project and one that should be forwarded as there is great need for this type of service.

Along the same line is the announcement that the Junior League of Baltimore, at the suggestion of Dr. Olive Whildin, Director of Special Education in the Baltimore Public Schools, plans to open a nursery school for children with defective hearing. It is planned to take children between the ages of 2.5 to 5.5 years. In addition to standard nursery school instruction, the children will be trained in speech, in lip reading, and in the use of what residual hearing they may possess.

(Continued on Page 148)

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Linguistic Problems of Brain-Injured Servicemen

Mary Huber*

ONE of the most challenging aspects of the rehabilitation program is that of dealing with the linguistic problems of brain-injured servicemen. In various parts of the country the Army, the Navy, and the Veterans Administration have established speech correction facilities to handle these war casualties. After World War I there was very little, if any, provision made for speech reeducation of the brain-injured. The science of speech correction was then in its infancy. Today, however, there are capable, scientifically trained speech therapists among both service and civilian personnel who are demonstrating their usefulness in dealing with these complex language disabilities.

Linguistically handicapped brain-injured patients appear most often in the neurological wards of the various hospitals. Neurologists and neurosurgeons recognize the problem we are dealing with under the term *aphasia.* Aphasia has been defined as as amnesic language disability resulting from a localized injury to one or more of the language areas of the brain. When we say that aphasia is an amnesic speech difficulty we refer to the patient's apparent inability to recall the sounds or words of his native language either for comprehension or verbal expression. The aphasic patient has been compared to an individual suddenly transported to a foreign country without having any previous experience in hearing, understanding, speaking, reading, or writing the language of that area.

APHASIC language disabilities resulting from injuries to the brain acquired in World War II have been numerous. Last spring the Army Service Forces established a speech clinic at Halloran General Hospital on Staten Island with facilities specifically aimed toward the rehabilitation of aphasics. From time to time there were as many as twenty-five patients receiving language reeducation from an average staff of six speech correctionists. The rehabilitation program was designed to provide a linguistically enriched environment in as many phases of language activity, and for as many hours of the patient's day, as were under control of the speech clinic. Fortunately an army hospital post is a closely knit social organization offering many opportunities for a variety of language experiences.

The best way to describe the uses that the speech clinic was able to make of these facilities is to tell you something about the patients themselves.

One of the patients, a jaunty, good-natured, attractive boy named Charlie, had received his head injury during the raid on Pearl Harbor. It left him with a very limited vocabulary for both speaking and comprehension. Yet his general intelligence was only slightly impaired and he compensated so well for his difficulties through his alertness and vivid gestures that he seldom realized the seriousness of his language loss. As a consequence of this he was inclined to consider formal language training a nuisance and he argued, good-naturedly, that as far as he was concerned it was all a waste

*This address was presented at the 1946 Institute on Reading Disabilities at Temple University, January 30, 1946. Mary Huber (Ph.D., Wisconsin) is Assistant Professor of Education at New York University.

of time. But it was the problem of the speech clinic to prepare him for the more complex linguistic environment of civilian life.

Since Charlie would never settle down to a formal lesson is was necessary to create linguistic situations which would enrich his vocabulary without letting him realize that he was working at it. Charlie was an extrovert. He was not inhibited socially by his vocabulary limitations. Although he avoided formal instruction, he was quite willing to spend his whole day in the friendly, congenial atmosphere of the speech clinic. One of the activities we created for him was the morning shopping expedition. Every one who needed anything from the Post Exchange would see Charlie, who made out the shopping list and collected the necessary funds. Then he and one of the sergeants on the speech clinic staff would set off in search of the required merchandise. Charlie did all the purchasing and only referred to the list when he could not recall the required word. He was frugal by nature and usually argued about the price of things in spite of the minimum rates in the Post Exchange. He would often apologize to the patients and members of the speech clinic when he returned because he was not able to bring back more change.

There was a news center on the post where ambulatory patients could go to see newsreels, listen to radio news broadcasts, read the newspapers and periodicals, and at certain hours listen to a visiting news commentator who would discuss the topics of the day with the boys. The speech clinic patients were encouraged to use the news center daily and were frequently asked to discuss the information acquired there.

At ten-thirty every morning coffee and doughnuts were served to all the aphasic patients and the staff of the speech clinic. The latest news and gossip of the day were discussed and there was much joking, laughing, and repartee. Every patient was drawn into the conversation sooner or later and encouraged to give his opinion on various subjects. These sessions became so popular that other patients, not enrolled in the clinic, often asked to attend. They were encouraged to do so because it helped the aphasic patients to adjust to normal-speaking fellow patients.

After the coffee hour one of the speech clinicians often read aloud to the patients from a book or magazine article which was likely to be of interest to most of them. After reading a few paragraphs he would ask one of the patients to tell him as much of it as he could remember or had been able to understand. Sometimes the book would be passed around among those patients who could read aloud and the other patients would listen. Charlie usually listened about ten minutes at these sessions and would then be off looking for more exciting entertainment.

Charlie was often present while other patients were taking lessons. He appeared to take no interest in the procedures but we discovered accidentally one day that he had been taking it all in. I was working with a little corporal who was laboriously working up from a vocabulary limited to a few violent exclamations of profanity. I was called from the room to answer the telephone and returned to find that Charlie had taken over the lesson and was giving an extremely accurate demonstration of my techniques. With very little encouragement he continued. The other patient was amused but did not object and before long the two were having a hilarious time over Charlie's humorous impersonations of the various members of the teaching staff. From that day on Charlie was given every opportunity to assist fellow patients whom he considered worse off than he was.

Letter writing was one of the most fruitful activities in the language rehabilitation program. There was Dick, who had received a shrapnel wound on D-day, and had spent long lonely months in a European hospital before he was well enough to be sent home. When he came to the speech clinic he was able to get across to us the fact that he had a wife and seven children in Baltimore and that he was afraid to go home and have them find out that he couldn't talk. He was a tall, shy, serious-faced chap whom we believed would not easily be encouraged to participate in linguistic activities but Dick surprised us. As a first step we suggested that he start writing daily letters to those seven children. This he was quite happy to do and his daily correspondence was one of the highlights of his convalescent period.

It was our custom, with a new patient, to outline for him a variety of activities aside from the usual speech clinic program which would facilitate his language development. These activities included attending the news center daily, seeing all the movies, plays and entertainment programs that various organizations provided for the patients, and participating in conversations at any and every opportunity regardless of occasional failure in expression or comprehension. Dick listened attentively to these suggestions and to our amazement took every one of them literally. Every waking moment of his day was spent in the pursuit of language activity. He became the best known G. I. on the Post. One of his self-appointed tasks was to stand near the bus terminal and offer to show visitors to their proper destinations. Many of them were under the impression that this was a gracious little service provided by the hospital administration. Within two weeks Dick was the most fluent conversationalist among all the patients and never missed an opportunity to tell anyone how he got that way.

One of the most difficult and pathetic cases we had was a young lieutenant injured in the Italian campaign. He had been a brilliant scholar, an accomplished painter and a skilled pianist. In his youthful experiences he had never met with failure in anything he attempted. Charming, self-assured, and arrogant he was pathetically unprepared for the catastrophe in store for him. His accident left him incapable of understanding a single word of his native tongue and his own speech was an unintelligible jargon of sounds which, by no stretch of the imagination, could be interpreted to mean anything. Here we were faced with, not only one of the most severe aphasic problems, but also a personality in a paralyzing state of frustration.

In such cases the first and most essential technique is to improve the auditory verbal comprehension. With our young lieutenant it was necessary to begin auditory stimulation with the most elementary phonetic drills. At this stage of the retraining program it is often a great strain on the therapists ingenuity and resourcefulness to motivate the patient because of the elementary nature of the language activity. His verbal comprehension is so poor that it is impossible to reason with him if he looks upon the exercises as being too childish for him, and yet he is profoundly frustrated by the realization that he cannot cope with more complex material. It has been found that those patients who were given language training almost immediately following their injury adjusted most favorably to their handicap, manifested less tendency to inhibit linguistic activity, and developed fewer asocial traits than those patients whose language retraining was delayed for weeks or months.

WHILE personality traits strongly influence a patient's attitude toward speech reeducation, there are certain well-recognized characteristics of brain-injured patients which may interfere with their adjustment to the educational program. The power of initiating an activity themselves is often limited. Most of the activities of the central nervous system are slowed down. Any function, including linguistic activity, is likely to lack order, rhythm, and coordination. Attention lags and comprehension becomes blurred when the discussion becomes complicated. Emotional outbursts and frequent expressions of profanity usually indicate that the situation has become too difficult and it is necessary to shift to an easier performance.

On the whole, however, psychotic manifestations are not common among brain-injured patients. Psychiatrists have observed that hysterical symptoms tend to appear more frequently in connection with minor physical disabilities. The term *hysterical aphasia* is considered a misnomer by many authorities partly because, by definition, aphasia is the result of an organic lesion. On the other hand, the symptoms of aphasia are too subtle and complicated to be simulated by anyone who has not had first hand experience with the affliction. It may, therefore, be reasonable to consider the possibility of 'hysterical aphasia' as a residuum of true aphasia. In the course of recovery from a head injury a patient may be temporarily speechless. During this period, if he is not given some assistance in his attempts to speak, he may inhibit linguistic activity; when his physical restitution has taken place he may still manifest his early symptoms of aphasia. It is for this reason that we cannot over-emphasize the importance of providing language therapy for aphasics as soon after their injury as possible.

The most intelligent and well-educated patients are often the worst subjects for reeducation. They become despondent because they remember, too well, their former abilities. They protect themselves from reality by rationalizing that their case is hopeless and instruction is futile. The sooner such individuals can be given some encouragement the more helpful will be their outlook and the more cooperation can be obtained from them.

Most aphasic patients require a certain amount of individual assistance; but an ideal program of reeducation also includes much group activity. Contrary to the opinion of earlier authorities on the subject the average aphasic is capable of working from three to six hours a day without danger to his physical or intellectual status. The program, however, must be thoughtfully designed to include frequent rest periods and a great variety of language stimulation. It has been found that what appears to be fatigue and reduced efficiency in one activity will disappear when there is a shift to another type of performance. Fortunately most linguistic activities, including speaking, listening, reading, writing, and even spelling benefit most aphasics. Often those activities requiring the least effort on the part of the patient prove to be the most effective in increasing his vocabulary. Auditory verbal stimulation, which is one of the most essential phases of retraining, is often sadly neglected in the training of the very patients who need it most. Silent and oral reading, for both comprehension and self stimulation, are among the most potent aids in reestablishing sensory and motor patterns for words.

The speech therapist often has to make the decision as to whether the patient should be made to shift his handedness or not. If one side of the body is permanently handicapped by paralysis there is no choice but to use the other hand. But when there is no

paralysis it is not often so easy to decide. If it can be safely assumed that most of the language areas of the dominant hemisphere have been destroyed linguistic rehabilitation may be facilitated by a shift of handedness to the opposite side. Individual idiosyncracies, however, make it unsafe to generalize on this matter.

Adult aphasics regain their language abilities more laboriously, but not unlike the way in which young children learn to speak, read, and write. Many of us have forgotten how we learned language as a child but still have a vivid recollection of how we learned a foreign language. Those of us who were fortunate enough to learn it in the country where it is spoken realize that that is the most dynamic system. But, however we learned it, we found that simple and concrete things come first and speed and skill only after much practice and repetition. With adult patients there is the problem of presenting elementary material in a way that will not make it seem childish, this has also been the problem of foreign language teachers and much can be learned from studying their techniques for the rehabilitation of asphasics.[1]

Language rehabilitation seldom occurs suddenly, or even shows marked improvement from day to day; for this reason small successes on the part of the patient must receive favorable commendation. The patient himself is often unaware that any improvement has taken place. At this early stage in the retraining program the speech clinician may even find it necessary to justify her place in the rehabilitation program. Other workers in the situation may expect miraculous developments over night. Those unfamiliar with the aphasic consitution seldom recognize that language reeducation may be a matter of years rather than weeks or months. Even today there are very few brain-injured patients who have been given adequate time to prove their ability to profit from a well-rounded educational program. It may be necessary to point out that the normal development of speech is a matter of years, and that an individual who has lost his language ability due to destruction of nervous tissue may need at least that long to regain the function. The fact that it may take a young man a few years to learn to talk again should not prevent him from having the necessary assistance any more than an orthopedic patient with a favorable prognosis should be denied an extensive period of physical therapy.

The reeducation of linguistically handicapped brain-injured servicemen has proved to be a stimulating and satisfying experience. We need more and better educational facilities and techniques, we need more confidence and cooperation from other rehabilitation agencies; we need more research in the nature of cortical functions and their relation to linguistic activity; but we have made great strides and are convinced that this is a worthwhile enterprise and that speech correctionists can make a significant contribution to the rehabilitation program.

[1]One of the most useful texts for this purpose is I. A. Richards' Pocket Book of Basic English (illustrated with match stick figures), which is sold on newsstands for twenty-five cents.

News and Announcements

(Continued from Page 142)

Beginning with the summer session of 1946, the University of Colorado will offer a Master of Arts degree with specialization in speech correction. The program will be under the direction of Dr. Ernest H. Henrikson and Dr. Dorothy I. Anderson. Basic and advanced courses in speech correction and allied areas will be offered. Clinical help for both children and adults will be available.

In March the Bureau of Medicine and Surgery, Navy Department, published a 340-page supplement to the U. S. Naval Medical Bulletin entitled *Rehabilitation at the U.S. Naval Hospital, Philadelphia.* It is a comprehensive presentation of the naval rehabilitation program, since the Philadelphia Naval Hospital served as the center for all the blinded of the Navy, Marine Corps, and Coast Guard, all the deafened of these services, about one-half the amputees, as well as a smaller proportion of those suffering with combat fatigue. The bulletin is in effect a symposium on each of the programs, presented as a series of reports by members of the various staffs involved and carefully edited by the Rehabilitation Officer, Commodore Richard Kern (M.C.) U.S.N.R.,. to avoid duplications and omissions.

The first group consists of 14 papers on the various aspects of the rehabilitation of amputees. Based on 829 amputations on 769 patients, this symposium embodies much that is of value to those interested in this branch of surgery. Of special interest is the pioneer work that was done with 'custom-built' prostheses and the educational rehabilitation of amputees, including pre-vocational training, and their instruction in the driving of automobiles.

The hearing and speech rehabilitation program is covered by nine papers based on experience with over 3000 patients. In some detail are presented: the history and development of the program, the philosophy governing the approach to hearing rehabilitation, the incidence, etiology and statistical analysis of hearing loss in the Navy are presented in some detail. Also included are discussions on the way the medical and non-medical services were coordinated, physical facilities and equipment, problems met in testing of hearing and the selection and fitting of hearing aids, the fabrication of ear molds, speech reading, auditory training and speech correction in the reeducational program, and finally a presentation of findings from the questionnaire sent each rehabilatee after leaving service.

The third group of seven articles reports the work done with 157 blinded men. Of particular interest is the chapter on the reeducation of newly blinded young adults, inasmuch as previous methods were largely based on experiences with those who were blind from infancy or early youth.

The fourth program is covered by a detailed article by members of neuropsychiatric staff. The scope of the program is indicated by the fact that in the first nine months of 1945, a total of 1762 patients were disposed of by medical survey.

The role played by the Red Cross in the rehabilitation program is also discussed. Red Cross medical social service workers as well as the recreational workers, play an important part in the rehabilitation process by integrating the patient's personal problems with the purely medical aspects of the case.

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Rehabilitation of Aphasics In An Army Hospital

Vivian Mowat Sheehan*

A LITTLE MORE than a year ago a number of severe cases of aphasia appeared in Percy Jones General Hospital in Battle Creek, Michigan, one of the Army's largest neurosurgical and neurological centers. The result of the need for rehabilitation was the establishment of a speech therapy program in November 1944. The story of its growth from its humble beginnings with only one person to carry on the work to its present status is too involved and non-essential to the present purpose to bear relating in this paper. Let it suffice to say that through innumerable changes we have succeeded in developing a staff of six: two trained therapists, a civilian secretary-instructor, and three members of the WAC who serve as instructors.

The department occupies an entire ward, housing 20 patients. A brief picture of the physical surroundings will help one to understand some of the procedures to be described later in this discussion.

At one end of the ward is a large dayroom which has been furnished as a sun-porch and provides a comfortable place for self-entertainment and visiting with friends. It likewise serves as a place for large gatherings and group classes, and has been equipped with a blackboard, piano, phonograph, comfortable chairs, lamps, small tables, and davenport.

Next there is a large dormitory space containing 17 beds. In the center is a small circular area with a grouping of chairs around a radio. Along a central corridor there are about 12 small rooms; three serve as private rooms, six have been appropriated and equipped as classrooms, others are used as kitchen, shower, utility rooms, and two serve as offices. All the rooms have been painted in bright cheerful colors, and as homelike an atmosphere as possible has been deliberately fostered.

THE SPEECH program itself is organized in consideration of its main purpose, which is to serve aphasics. The enlisted men live in the ward; the officer-patients spend the day with us, but live in officers' quarters. As in any speech therapy program, a number of stutterers, articulatory cases, voice cases, etc., wend their way to us for help. They attend classes and are given both group and individual instruction in separate classes on an out-patient or non-resident basis. The number of these non-aphasic cases is large enough to demand most of the time of one therapist.

A brief analysis of the types of aphasics we have found is also essential to a complete understanding of the things we do and use, for it must be remembered that most of these men are young victims of cranial injuries who were in excellent health prior to the injuries. Therefore, their progress and prognosis is better than that of the average civilian aphasic who becomes a patient because of a cerebral hemorrhage late in life. On the other hand, their penetrating wounds are prone to leave scar tissue, which makes them subject to convulsions similar to epileptic seizures. When uncontrolled, these lead to mental deterioration.

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Most of our aphasics have had left head wounds and most have been paralyzed on the dominant right side; we have had a few exceptions. Besides the actual penetrating wounds of the head, there are a number of cases of aphasia following left throat injuries which severed the internal or middle carotid, as well as the left recurrent nerve. Such cases are voice problems as well as aphasics. A few cases of cerebral hemorrhage not attributable to injury have been encountered. In two cases aphasia was due to an embolism following a chest injury. In addition, one case of cerebral malaria resulted in multiple lesions, causing a severe aphasia. The patient came to us after having been totally speechless for a period of three years while in a Jap prison camp.

When the aphasics reach our ward, they have been through surgery and are usually 'plated'; they are ours to keep as long as we deem expedient. And even though several months may have elapsed since the onset of aphasia, their problems are acute. In fact, perhaps because of this lapse of time, their problems may be even more acute. As a result of their inability to understand or communicate, they build up wrong responses—emotional reactions and attitudes of defeat. Their morale is at low ebb. They have been so overcome by repeated failures that they are naturally easily discouraged. There is danger in delaying reeducation even as long as we must, for the panicky, rambling, fumbling, responses soon become habitual and must be broken down as the new, purposeful, and satisfactory responses are established.

These patients may have both expressive and receptive aphasia, along with apraxia, alexia, and agnosia. They may be unable to speak and read, write, calculate, and understand. In other words their communication lines are badly damaged, perhaps on both ends—receiving as well as expressing. The result is a sense of frustration which may end in despondency, tears, or complete resignation and apathy. Repeated failures earlier may have built such barriers as to inhibit the return of that speech which would now be possible. And the individual may have withdrawn so far into his shell as to be almost oblivious to his surroundings and associates.

Still further problems beset the aphasic. He soon becomes aware that he can no longer do many simple things he once took for granted. He cannot talk at all, or not well enough; perhaps he cannot read, cannot write —perhaps because he is paralyzed he cannot even hold a pencil, let alone copy or write spontaneously. Often he blames his paralysis for his inability to write, unaware that even though his hand could function, he no longer conceives form normally and certainly cannot reproduce it spontaneously. It is an understatement to say that such a patient needs to be given the opportunity to relearn the basic skills.

Even more serious difficulties arise from the usually reduced capacity for abstract thinking, from memory defects, from a shortened attention span and a lack of ability to concentrate, or rather lack of ability to overcome and ignore distractions, and from a general impairment of intellectual functions.

Add to these things the actual personality changes, the tension, the need for rest and sleep, the anxieties, (the contrary euphoric state), the concern about and yet lack of understanding of his condition, the almost complete lack of a sense of humor, and the hundred and one additional almost freakish neurological defects which may be involved in individual cases, and you have a picture of the state of confusion which is typical of the aphasic.

FACED WITH these varied problems, and feeling that speech exercises alone could scarcely answer, we have worked out a program of re-

habilitation of the whole individual. While we have not developed or used any radically new procedures, I feel we have put together many methods and materials into a workable, practical plan of retraining. Though this has been scaled to fit our particular needs in an army hospital, it doubtless can be adapted to civilian clinics. In fact, Dr. Backus is using a modified version of the same program for the many veteran and civilian aphasics she now has at the University of Michigan.

Although we cannot duplicate the original training of each individual, we can and do reacquaint them with key material. This key material acts as a nucleus which possibly taps old associations and brings back a flood of related information. In evaluating the necessarily limited scope of our speech, reading, writing, and arithmetic classes, we must bear in mind that these elements are used to take advantage of a strong inductive effect.

Perhaps outlining a typical schedule will best illustrate our work. Let us take the case of Walt, a severe expressive and mild receptive aphasic. His power of speech was lost three years ago in a Jap prison camp. Walt has a speech class at 8:15, followed by a reading class at 9:00 (for while he understands some of what he reads silently, he cannot read aloud). At 9:45 he goes to Occupational Therapy for an hour. After his dinner hour (10:45) he has Physiotherapy at 11:50 and a period of free time until 12:45, when he joins the rest in a group singing class for half an hour. At 1:15 he goes to class for writing and spelling; at 2:00 he has an arithmethic class; and finally, between 2:45 and 3:45 he has an individual speech lesson of 15 to 30 minutes. In such a way his day is filled and he is kept busy with tasks he wants to do or with things he can accomplish. No brooding idleness here; no long stretches of loneliness.

Most of the classwork is carried on with small groups assembled on the basis of similar difficulties. We have stressed considerable group therapy, because speech is a social function and can best be practiced in normal situations, and because the contact with others has a therapeutic value in itself. It lessens self-pity and shame; it produces a sense of responsibility and a chance to help others who are worse off in another way. Nothing does more good, for instance, for the boy who cannot understand what others are saying than to become aware that he can help to guide an almost blind fellow-patient about the ward.

GROUP SPEECH CLASSES usually consist of five or six members with somewhat similar needs as far as speech is concerned. We use imitation, repetition, phonetic placement, and even manipulation, coupling visual, auditory, and motor images. We capitalize on involuntary speech and raise it to a voluntary level. We stress speaking in normal phrases and sentences, finding that oft-repeated groups of words are as easily said as single words, and promote a natural speech rhythm pattern. We do, of course, build vocabulary, too, choosing to talk about the things the patients need immediately.

Lessons for group speech work are planned around ideas based on units of work which we feel are a basic part of every person's vocabulary. We attempt to make the work as practical as possible and to give the aphasic as many normal phrases to speak as he can master, as rapidly as he is able to master them.

We work on *greetings* and *farewells*—or those phrases of casual speech everyone needs: good morning; hello, how are you; I'm fine, thank

you; goodbye; pardon me; thank you; you're welcome. Questions and answers based on *identification* form another unit: names, home towns, age, service in army, name of hospital, etc. A very practical unit on money can be worked out—with considerable opportunity for speech practice on names and values of coins and currency. The names of the days and months and work with calendars, with the chance to bring in the date each day, provide good lesson material. Special holidays, their names, salutations used at the time (such as "Merry Christmas"), customs, etc., form another unit to be worked as the days arrive.

Most aphasics are quite confused on *left* and *right* and need to practice following directions, both oral and written, using those words. *Parts of the body* form another unit.

The list is endless—a product of a little imagination and ingenuity and of observation of the things needed by the patients in their daily living. To give a few other suggestions: numbers, sounds of letters, names of letters of alphabet, titles, (Miss, Mr., etc.,) weather, members of a family (parents, children, sisters, etc.,), names of the patients' families, furniture, food, jobs, shaving, smoking, maps, meeting people, measurements, automobiles, telling time, colors, playing cards, geometrical forms, transportation, travel, buying articles, sports and games, city vs. farm life, animals, health, traffic.

Perhaps a few concrete examples of possible lessons on these materials would help to explain how we use them. Again, the possibilities are almost inexhaustible. A good teacher can always develop additional techniques. We have found that intensive work around a few words or ideas is best; one danger lies in trying to cover too much material. Actually, the material is the least important part of the lesson; the way it is presented, the work expected, and the motivation used are of primary concern.

In our situation, we have found that it is best to begin the group speech work informally with a bit of casual conversation. If the lesson were to be based on money, we would have real money at hand—plenty of change and some bills of several different denominations. Manner of presentation would depend on the difficulties of the patients. In several classes I have spent an entire period on change, naming coins and giving their values, and trying to obtain answers in practiced sentences. Some answers are given chorally, some answers singly. Listing new words on the board, numbering them, saying them as a group and reading them as individuals, following directions to name a certain one, using them in sentences, are all good ways of working one small bit of information intensively.

The unit on money may continue for many lessons. We find it wise to work several days on such a unit, give it a rest, and have a short review of it on other days. Although we know that a sense of repeated failure must be avoided at all costs, nevertheless some aphasics who fail continually on the same material need to be confronted with this material again and again. Boredom is another danger of such repetition. Even though many successive lessons may have the same material content, both boredom and the sense of failure can be avoided by altering the pattern of presentation.

Other ways to work on money are: asking the patient to state how much money you are showing him, asking him to lay out enough for a purchase of a certain amount, making change, checking change received, making out checks and deposit slips, etc.

Many of the things suggested here have involved more than speech alone; they make use of reading and

writing to tie up the visual with the motor; they make use of listening to try to train the ear and help auditory comprehension. In other words, we concentrate on one phase, but integrate it with the whole problem.

As the patients are taught to say a word or phrase, every possible approach must be used. I firmly believe that imitation is vitally important. As it is a voluntary procedure, it is often extremely difficult, especially for those who suffer an apraxia of the lip or tongue muscles. Yet, the patient must learn to repeat voluntarily before he can produce accurately at will without prior stimulation.

INDIVIDUAL SPEECH classes stress the work most needed—whether this is learning to produce the sound through imitation, or increasing vocabulary, or learning the alphabet. We use the tachistoscope, a mechanical device borrowed from the psychologist, which capitalizes on the aphasic's inability to ignore distractions. It releases, quite suddenly, a given word, phrase, or sentence; the patient responds involuntarily, then tries to produce the same response voluntarily. The oral speech and reading involved are coordinated with spelling and writing as the patient uses the metal letters, arranged on a black table, to spell the words he pronounces. These same metal letters (which make use of the tactile sense and temperature sense, as well as motor activity) are used for teaching the alphabet and numerals, both in and out of order. This individual period is also used for making recordings and using the 'Sound Mirror' to enable the patient to see or hear his own errors and his progress.

Much of the time, too, is spent in giving encouragement, building morale, offering help and guidance with individual personal problems. At every turn we must be aware of the importance of the emotional problems these men suffer. For instance, no academic gain can be made by the patient who is worrying because his wife, who is about to give birth to a child, is all alone. We had such a case—and the speech therapist had to step in to see that someone would stay with the wife. In another instance where a wife was in bad financial straits, a loan of five dollars by the speech therapist was necessary to put the husband sufficiently at ease to attend his classes. There can be no end to the ramifications of this work!

READING CLASSES are similar, with two to four persons each. Both silent reading (for comprehension and retention) and oral reading (for expression) are a part of the work. Phrased materials, used with a combination of motor activity and speech, facilitate the reading. Using a pocket tacked to the wall, we present the paragraph as a whole, break it into phrases—and the phrases into words, if necessary—and, finally, make sure to present the whole again. (The whole-part-whole method.)

Exercise in reading and answering questions, both in writing and orally, provides another means. At first simple flash cards, with a picture and a word on each one, are valuable. With the word cut off, the patient matches pictures and words, points out the correct picture from aural stimulation, names the pictures without the help of the words, and learns to recognize the words without the picture.

Although we have made some use of the army manuals for illiterates, we have found it necessary to create and adapt most of the materials; first, because as far as we can ascertain there are no materials with adult interests which are simple enough to serve our purposes; and second, because we wanted to give a civilian point of view, with an outlook toward the future. Most of our materials we

have adapted from children's science books, current issues of *Reader's Digest* and *Coronet,* comic books, etc. We have found it is best to use short paragraphs for some time, lest the patient become lost or discouraged. A gradual increase in length is desirable and necessary.

Just recently Dr. Van Riper made me aware of another good source of reading material, a Pocket Book of Basic English. I have not used it long, but am convinced of its excellence. It is fine for teaching abstract words like *there, to,* etc., and its illustrations or stick-drawings are indeed helpful to the aphasic. It is well-motivated and interesting.

In reading, the teacher must be constantly aware of differences in vision, because of the field defects present following occipital lobe injuries. Large print, carefully spaced, is essential. (We use a billing machine typewriter and double space.)

We have had one especially interesting case of a bilateral occipital lobe injury; foveal vision completely disappeared, leaving only peripheral vision. The patient likewise has a visual agnosia and cannot readily interpret what he sees. His eyes shift badly as he attempts to focus them, and he suffers from a limited field defect as well. His reading, of course, was quite a problem. We did arrange classes for him, all individual. We called them reading, writing, speech and arithmetic classes; but the procedures were a bit unique for their labels. In reading class we taught him to focus on objects first and to look about a room. Gradually we introduced words on a blackboard, then on large paper as is done for first graders, then on sheets of typing paper. At first he could see the word only if it were the one word on the page. Later he could read a phrase, but the problem of starting at the left side was difficult. Now he is able to hold a sheet of typed material, double-spaced, and with the help of a guiding pencil read about a paragraph before becoming fatigued.

If I may digress a little, it might be of interest to describe a few more of his problems. He cannot be treated as blind, for his interpretation of objects which he feels is badly disturbed. I have seen him more than once sit on the back of a chair. Besides, he has no idea of distance or spatial relationships. He does not know right from left and cannot tell whether the knee he puts his hand on is on the same side of his body as the hand.

Our greatest problems to solve with him are overcoming his fear of moving about alone, teaching him to stop and think where he is and where he wants to go, making him use what vision he has, helping him to interpret distance again, feed himself, dress himself, etc. One doctor put it this way: 'What Frank needs is plenty of "firm therapy".' But he is a book in himself. My point in telling this experience is to show that classwork must be made to fit individual needs.

WRITING CLASSES, with a roster of two to four, stress three things: penmanship (especially for those whose paralysis has necessitated a change of handedness), spelling, and sentence structure, so that patients can write their own letters. Outside of a few sets of wooden and metal alphabets, a blackboard, a list of Basic English words, a dictionary, a few sets of phonic word-builders, some spelling books, and plenty of ingenuity, few materials are necessary.

We begin by having the patient copy, if necessary, but always use practical materials—things he wants to write (his name and address, family names, days, furlough, pass, short sentences in use daily, etc.). Gradually he learns to produce the same without copy; then from dictation he

learns to write practiced sentences, and later new ones. More advanced patients create sentences, learn to spell, use more difficult words, and write short paragraphs and letters.

At first we use blackboards and large heavily-ruled paper for writing practice. Thick soft-lead pencils make for an easier grip. Good posture and holding the pencil and paper correctly are important.

ARITHMETIC is also taught in small groups of two to four. Often it is necessary to reteach number concepts, number combinations, and the four basic processes in arithmetic. In some cases more advanced work must be taught, depending on the previous training and future needs of the patients.

We find that flash cards are good for teaching number combinations, giving training in speech as well as arithmetic itself.

We have found that even though arithmetic is supposed to be a very abstract process, it is well within the grasp of most patients and provides an unsurpassed avenue of expression. One patient could not be persuaded to work at all until he found a micrometer in arithmetic class, became fascinated by it, and learned to use it. In order to do problems he had to learn to read; he went willingly to reading classes thereafter, especially when allowed to read problems he could later do in arithmetic class.

GROUP SINGING we employ three times each week to promote socialization and companionship. In addition it provides a way to stimulate associational pathways through old and familiar songs. I have seen a number of men who were absolutely unable to talk, but who were able to sing a whole line of "My Bonnie" or "Old Black Joe." The associations and rhythm senses tapped give a wonderful stimulus to speech.

OTHER CLASSES are sometimes developed to meet special needs and desires. Typing provides good practice for partially paralyzed fingers and makes for better spelling. Higher mathematics sometimes has its appeal. We had one patient who had been an advanced engineering student before entering the war. He lost his confidence, feeling he could never handle engineering mathematics again as a result of his aphasia. But a refresher course of daily work in algebra, trigonometry and calculus for a period of three or four weeks was all he needed to regain what he had lost. No speech training was necessary; all he had was included in his mathematics class. Today he is back in a university finishing his engineering course.

We attempt to coordinate the speech and language training with the work in occupational therapy and physiotherapy. Conferences are held on the patient's work, ability, needs, interests, attitudes and progress.

Throughout the entire program there is the most vital element of mental hygiene. We are continually helping the patient to understand aphasia and to realize why he can't say his name even though he knows it. We use drawings of the brain, simple explanations, stories of others' eventual success despite their losses. We are busy offering encouragement, getting rid of false notions, and overcoming disillusionment. We build a cheerful working atmosphere with plenty of informality and freedom from tension. We try to develop a sense of humor through teasing, telling jokes, pulling little pranks, etc. We try to help the men look forward to the future with a feeling of pleasant anticipation rather than dread — a simple task on paper, but a tremendous one in view of their physical and mental handicaps. There is no special time set aside for this phase of the program; it must be ever-present. It

must permeate every class and every moment of the day. I cannot stress too much the value of having interested, understanding, patient people to work with the brain-injured. Most aphasics never want sympathy; those who do must be weaned from it. 'Firm therapy' to build independence is all-important.

Perhaps a couple of illustrations will show how necessary this morale-building is. I recall one handsome young fellow who had not yet recovered from the shock of having looked in the mirror and seen 'half his head' gone. The experience will never leave him; he needed help to recover from the blow. Every now and then he still needs help to understand how he can continue to live and learn, even though he has lost so much of his brain.

On one occasion we had a virtual epidemic of convulsions on our ward. The spirit seemed to catch one after another of the boys and they turned to us to ask, 'Who's next?' The convulsion, though painless, is a rather horrible thing to watch. It leaves the patient terrified and weak, wondering 'why' and 'what hope?' On this particular occasion no one could work; the entire day was spent in reassuring the men, in explaining what causes convulsions, in telling them what to do to help themselves and others, and in building a sense of humor to relieve the terrific tension. No learning could proceed until the atmosphere of tragedy and fear had been cleared away. I believe it was the hardest day's work I ever did.

GOOD SOCIAL adjustment, the ability to meet others and act freely and comfortably in small groups (and later in large ones), either with or without speech, receives considerable emphasis. Informal parties, card games, or gathering in the kitchen for an occasional cup of coffee or glass of milk, are good means for promoting a sense of companionship and friendliness. In such an atmosphere many speech attempts are made which would not come forth in a classroom. Such activities also play no small part in helping the staff to gain good rapport with each patient.

As another phase of our therapy we include the little duties we perform to alleviate the pressure of necessary routine. We help the patients care for their clothing, get needed supplies, write letters home, read mail, straighten out pay checks, get service ribbons, keep up insurance forms, etc. These little odd jobs, simple as they seem, put the patient at ease and leave him less disturbed in an environment which is inescapably too demanding and difficult for the brain-injured.

Of great importance in understanding the men with whom we are working are the visits and correspondence with members of their families. We usually explain to the family what aphasia is, how their boy is affected, what handicaps he must overcome, what we will try to do, what results can be expected in general, and how he must be treated when he comes home. We provide each family with a copy of the bulletin, 'Aphasia in Adults' (published by the University of Michigan Speech Clinic), to further their understanding. When members of the family remain near the hospital and see the patient frequently, we make use of them and give them actual instructions to follow in working with the patient.

Still another portion of the problem is the 'follow-up', attempted in an effort to help the aphasics adjust to civilian life or continue necessary reeducation once they leave the army hospital. By means of urging further training (either additional speech training or vocational training), making arrangements for it, and through the media of correspondence and personal contacts, a check is kept on the men who leave.

REGRETTABLY, I have only touched upon some of the things we have been trying to accomplish. We have felt it worthwhile; some of the results are measurable enough, others show simply in the healthier and happier attitudes of those who leave us. We feel we can conclude that we have been able to hasten the process of reeducation; that we have pushed it far beyond the level usually attained by the patient allowed to drift his own way without guidance and direction and professional encouragement, but above all we know that we can take credit for making life a brighter, pleasanter and more worthwhile venture for those who once dreaded its very existence.

THE 'BABBLE-LUCK' THEORY

If the family group of say thirty souls has an inventor of a private language of say twenty-five words and say ten of the thirty understand eight of the words, what is the probability that any one of these ten will use any of the eight words that he understands, use it, that is, to mean to himself the thing or act or event in question, so as to aid him, for example, in planning to dig clams? This probability is substantial, but it is not 100 out of 100. Some persons in such a group will hear and understand a word, hundreds of times, but in all probability never say it at all, except accidentally as an element in their meaningless chatter. But some will, when they themselves utter this word in their meaningless chatter or for any reason, understand it as if it were spoken by A. And this act of saying a word and having it mean something will tend to be satisfying rather than meaningless and will therefore be more frequently repeated.

If A, the original inventor, hears B or C or D say one of the words to which he, A, attaches meaning when he himself says them, what is the probability that he, A, will understand the word spoken by B? It is not 100 out of 100. The connection *kuz-clam* may remain confined to *kuz* said by A, because A is stupid, or by nature an extreme introvert, or what William James called a lonely thinker, or because of the general tendency of connections to operate only in the way in which they are formed. But A has, by hypothesis, an I.Q. of 100 or better, and if B goes about saying *kuz* repeatedly and as if he meant something, A is likely to notice what B says, and will at least be more likely to attach the thought of *clam* to the sound *kuz* when made by B than to attach any other one meaning to it. I should conjecture that the probability of A's understanding B would be well over 25 in 100 and under 90 in 100.

It is perhaps time to attach a name to the theory which I am expounding. Let us save everybody trouble by giving it an opprobrious name from the start! Since it relies on the miscellaneous vocal play of man instead of his alleged mimetic or emotional utterances, it could be called the "babble-babble" theory. Since it starts with languages private to single persons, and progresses gradually toward speech in the full speaker-hearer relation (which, indeed, my exposition has not yet reached) it could be called the "onety-twoty" theory. Since it depends on successive selections of chance variations in sound-reality connections, it could be called "chancy-chance" or "luck-luck" theory. Or we may combine its two main dynamic features and call it the "babble-luck" theory.

EDWARD LEE THORNDIKE, *Man and His Works* (Harvard University Press, 1943), 96, 97.

News and Announcements

(Continued from Page 148)

The bulletin contributes an important chapter in the medical history of the recent war. Since most of the patients will continue to be under government surveillance as veterans, their future progress offers invaluable opportunities for observation and follow-up to determine the ultimate value of methods of treatment, prosthetic appliances and programs of re-education and training.

The University of Kansas School of Medicine has recently established a speech clinic under the direction of Miss Quintilla Andrews. This clinic is prepared to give remedial work in the areas of stuttering, articulatory defects, nasality, foreign dialect, cerebral palsy and cleft palate speech. Due to limited facilities and the large demand for instruction, speech training for the mentally defective will not be attempted at the present time.

The Indiana Speech Correction Association held a meeting April 13 at Indiana State Teachers College in Terre Haute. With Miss Vivian Roe presiding at the morning session, Dr. Robert Milisen discussed the veterans' rehabilitation program at Indiana University. Miss Thelma Knudsen presided at the afternoon session in which papers were read by Dr. Wendell Johnson, Dr. Delyte W. Morris and Mr. C. J. Dexter. Mr. Dexter is Chief of Vocational and Educational Rehabilitation of Handicapped Veterans in Indiana, and he and Dr. Morris discussed problems relating to veterans' rehabilitation. Dr. Johnson discussed the problem of stuttering in relation to the national research plan of the American Speech Correction Association.

Mr. Harry P. Wareham, of Rochester, N. Y., who served in New York City as Executive Vice President of the National War Fund during its first year of operation, 1943, will become Executive Vice President of the American Society for the Hard of Hearing on March 1. As administrative officer he will direct the Society's expansion program.

Mr. Wareham's experience covers more than a quarter of a century of Community Chest management in Rochester and in other cities, during which time he was instrumental in raising $230,000,000 for educational and philanthropic purposes. He is recognized as one of the outstanding community chest executives in the country.

Personals

Mr. Leroy Hedgecock of Indiana University has replaced Dr. Mary Huber as Senior Speech Consultant at the University of Minnesota. Dr. Huber has taken a position as Assistant Professor of Education at New York University. Mr. Hedgecock is taking a leave of absence this summer to further his doctorate work at the University of Wisconsin.

Miss Katherine Thorn will be Acting Director of the clinic of the University of Minnesota this summer and will teach Dr. Bryng Bryngelson's course in Speech Pathology while the latter is Visiting Professor at Northwestern University School of Speech.

Lt. (j.g.) William G. Hardy has succeeded Dr. Herbert Koepp-Baker as Non-Medical Director of the Hearing and Speech Rehabilitation Unit, U. S. Naval Hospital, Philadelphia. Before Dr. Hardy entered military service he was Assistant Professor of Speech, Director of the Speech Clinic, New York State College for Teachers, Albany, New York.

Miss Grace Williams has accepted a position in the Speech and Drama Department at the University of Kansas. While in service she was a hearing therapist in the Naval Hearing and Speech Rehabilitation Unit.

(Continued on Page 164)

JOURNAL OF SPEECH DISORDERS, 1946, **11**, 159-163

Indices of Achievement In Voice Instruction

Franklin H. Knower*
Marjorie Emerson

THE focal purpose of this study was to analyze certain problems in the measurement of improvement in vocal skills as the result of voice instruction in a speech course. Specifically we wanted to know the answers to the following questions.

1. Can an intelligibility of tonal symbols test be used as a satisfactory index of the effects of instruction?

2. Can recordings of a short sample of oral reading be used to provide a satisfactory index of the effects of instruction?

3. What is the reliability of ratings by different numbers of judges in evaluating achievement in voice usage?

4. What is the rating-rerating reliability of judgment of voice achievement in recorded voice usage?

5. How does a method of the judging of single records against the rater's standards compare with a paired comparisons method in determining the effects of instruction?

6. How much more improvement in voice usage occurs as a result of direct instruction in voice than will occur if the speech instruction objectives are directed toward the development of skill in informal speech activities?

Procedure

FOUR groups of students were used in this study. Two of these groups served as experimental groups, hereafter referred to as Group I (17 students) and Group III (15 students) and two groups served as controls, hereafter referred to as Group II (11 students) and Group IV (13 students). Groups I and II served as subjects in Experiment I and Groups III and IV in Experiment II. All subjects were students at McKinley High School in Cedar Rapids, Iowa. At the beginning of the fall term, Groups I and II were given a test of ability to use tonal symbols in communicating emotional moods and meanings, and read a short passage 1.5 to 2 minutes in length from Mark Twain's 'The Oldest Inhabitant.' The reading was recorded on acetate records. The test of tonal symbol has been reported in detail in another place (**1**) and therefore will be described only briefly here. The test yields quantitative indices of achievement in voice control in terms of percentages of the symbols which are accurately understood by listeners. Skilled college speakers receive scores of 80 to 95 percent intelligibility. The test reading was done after a brief preliminary reading of the test passage.

Group I, the first experimental group, was given an intensive six weeks period of instruction in voice usage as a unit in a general speech course. A detailed analysis of voice was made and each student was given criticism and guidance in his practice on voice drills and voice usage in oral reading exercises. Subordinate units of the voice training unit included a discussion of voice production principles and standards of vocal achievement, and practice exercises on breath control, resonance, qualities, inflection and pitch change, loudness or intensity, emphasis, rate and phrasing, articulation and pronunciation, general drills for the projection of intellectual and

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TABLE 1. Tonal symbolism performance test.

	Percentage of accuracy			
	Before	*After*	*Difference*	*Significance*
Group I (Experimental)	40	64	24	8.10
Group II (Control)	36	43	7	1.67

emotional meanings, and procedures in the preparation for the oral reading of material from manuscript. Most of the exercises may be found in Chapters VIII and IX of the text used in the course (3). The control group in another class was given work on informal speech activities during this period. Little attention was paid to voice usage in these exercises.

Students did not know that they were to be retested until the end of the six weeks study period when the initial tests were repeated. Groups III and IV were given the same instructional procedure as Groups I and II. However, only the record test was used with these groups. This part of the experiment conducted with Groups I and II was repeated with Groups III and IV to check on some of the techniques of analyzing the data. These comparisons will be reported in that section of this report.

ANALYSIS OF DATA

THE *t* test (2, 59) was used to determine the significance of the difference ratio between the experimental and the control group on the test of tonal symbolism. Table 1 presents the significant items of data on this test. Although both groups made some gain, only the experimental group made a significant gain, and its gain was almost five times as significant as was the gain in the control group. The corrected split-half reliabilities of these scores were .87 and .91 for the experimental group and .84 and .93 for the control group. The tests are thus shown to have high reliability in this situation. The tests indicate that a far greater amount of voice improvement occurs in a speech class from a unit directed toward voice improvement than occurs from incidental voice activity in a general speech course unit.

The records were rated twice by two different methods. The first we shall call the single record method and the second the paired comparisons method. Each record was given a number. In the single record process of rating the order of numbers for the experimental and the control group and the before- and after-instruction records were jumbled. The raters did not know the exact purpose of their activity but it was felt that every effort should be made to achieve a random order for the rating of the voice usage on the records. In this process the raters were instructed to listen to each record as it was played and immediately to record their ratings under the proper number on the rating scale. In the paired comparisons method of rating the order of the experimental and control group records only were jumbled. The raters were told that they were to hear two records made by the same person. They were to listen to both records and then immediately to rate the performance in both records. They were told to rate on the same general standard as they rated in the single record process but to allow their ratings to reveal any comparative qualities in the two records. Sometimes the before-instruction record was played as the first record in each pair and sometimes the after-instruction record was played first.

The raters were graduate students of some years teaching experience and were familiar with the voice usage criteria which appeared on the rating scale and with the processes of such ratings. The scale was discussed briefly

TABLE 2. Reliabilities of ratings of voice criteria. All correlation coefficients are positive.

	Uncorrected Correlation
Experiment I	
1. Correlation of raters 1 and 2—single record method	.68
2. Correlation of raters 3 and 4—single record method	.88
3. Correlation of raters 1 and 2—paired comparisons method	.83
4. Correlation of raters 3 and 4—paired comparisons method	.69
5. Correlation of rater 1—single record with paired comparisons method	.66
6. Correlation of rater 2—single record with paired comparisons method	.46
7. Correlation of rater 3—single record with paired comparisons method	.69
8. Correlation of rater 4—single record with paired comparisons method	.71
9. Correlation of average ratings of four raters—single record with paired comparisons method	.80
Experiment II	
10. Correlation of raters 1 and 2—single record method	.61
11. Correlation of raters 3 and 4—single record method	.56
12. Correlation of raters 5 and 6—single record method	.68
13. Correlation of raters 1 and 2—paired comparisons method	.66
14. Correlation of raters 3 and 4—paired comparisons method	.62
15. Correlation of raters 5 and 6—paired comparisons method	.68
16. Correlation of rater 1—single record with paired comparisons method	.61
17. Correlation of rater 2—single record with paired comparisons method	.68
18. Correlation of rater 3—single record with paired comparisons method	.68
19. Correlation of rater 4—single record with paired comparisons method	.71
20. Correlation of rater 5—single record with paired comparisons method	.75
21. Correlation of rater 6—single record with paired comparisons method	.41
22. Correlation of average of six raters—single record with paired comparisons method	.88

but no attempt was made to force a high correlation of judgment by hothouse or arbitrary definition of the criteria to be rated. The work was done as a part of the laboratory work in a graduate course in speech education. The raters cooperated whole-heartedly in the project. Four judges worked with the records for Groups I and II and six judges rated the records for Groups III and IV. The rating scale and instructions used in the project were the following:

These records which you are judging are recordings of the oral reading performance of a beginning speech class of junior and senior high school students. You are to judge the performance on the basis of the average high school student's ability in reading. A portion of each record will be played and you are to judge Vocal Quality, Vocal Intensity, Articulation, Intellectual Meanings, Emotional Meanings, and General Effectiveness on the scale outlined below.

Judging Scale

'1' Very bad—incoherent, unpleasant, jumbled, inaudible, blocked.

'2' Weak—some acceptable voice traits but total effect very weak.

'3' Poor—performance very weak in several respects.

TABLE 3. Correlations for each judge between the paired comparison and single record methods of judging on the items of the rating scale. All coefficients positive.

Quality	*Judge 1*	*Judge 2*	*Judge 3*	*Judge 4*	*Judge 5*	*Judge 6*	*Average r's*
Vocal Quality	.36	.73	.22	.67	.52	.42	.48
Vocal Intensity	.47	.33	.41	.59	.60	.37	.46
Articulation	.48	.21	.40	.41	.45	.26	.39
Intellectual Meaning	.51	.51	.64	.78	.67	.25	.56
Emotional Meaning	.66	.50	.63	.24	.62	.33	.50
Pitch Flexibility	.46	.72	.62	.71	.46	.27	.54
General Effectiveness	.53	.73	.65	.67	.74	.46	.63

TABLE 4. Significance ratios for scores on performance before and after training when rated by the paired comparison and single record methods.

Experiment I

	Experimental Group (I)		*Control Group (II)*	
	Paired Comparison	*Single Record*	*Paired Comparison*	*Single Record*
Judge 1	6.4	1.22	.40	2.41
Judge 2	8.71	1.16	.14	.04
Judge 3	4.32	1.18	.13	.80
Judge 4	7.29	2.96	2.31	.88
Average	6.88	.63	.75	1.04

Experiment II

	Experimental Group (III)		*Control Group (IV)*	
	Paired Comparison	*Single Record*	*Paired Comparison*	*Single Record*
Judge 1	3.31	2.66	−1.25*	2.24
Judge 2	3.56	2.43	.17	1.74
Judge 3	3.10	3.31	− .35	.58
Judge 4	.81	2.56	.35	.29
Judge 5	3.59	3.81	.35	.35
Judge 6	2.66	2.98	− .24	.15
Average	2.84	2.93	− .16	.89

*Negative significance ratios here indicate that on the average the judge thought the second records poorer than the first.

'4' Average—no marked weakness but ineffective.

'5' Fair—promising in spots.

'6' Good—strong in some respects, total effect very good.

'7' Excellent—high standard of performance throughout.

Score the reading by placing the numbers in the judging scale after the items being judged. Please score each item on the '1' to '7' basis.

The judges were then furnished with a record sheet on which the items (Vocal Quality, Vocal Intensity, etc.) for rating were listed and spaces were provided for the ratings which were to be made of each speech recording. The name and sex of the student whose record was being rated were noted on this record sheet, and the date of the rating was indicated.

Ratings on the separate criteria were summed to provide a general rating on the use of voice in the oral reading activity.

An item of primary interest in rating studies is the reliability of the ratings. Table 2 shows the reliability of the total scores of ratings on the before- and after-instruction records. These ratings reveal that the reliabilities of the summed rating scale scores were fairly high for independent raters. When the average ratings of four to six raters were secured we have ratings of high reliability. There appears to be no significant difference between the reliabilities of the ratings made under the two different processes of rating. There is considerable variability in the reliability of raters on the rating-rerating of the same records of achievement at different times. There is approximately the same consistency in rating between two independent raters as between successive ratings of the same rater.

The consistency with which the different raters in Experiment II rated the various items on the scale is revealed in Table 3. Here we see that some items were rated much less consistently than others. The average correlations show general effectiveness to have almost as much consistency as the composite or summed scores for the

group of raters as revealed in Table 2.

Table 4 contains the significance ratios on the rating scale totals for the experimental and control groups. The significance ratios for Experiment I show achievement with much greater certainty when the records are judged by the method of paired comparisons than when judged by the single record method. The comparisons for Experiment I appear with about equal certainty. The two experiments do not support each other in indicating the definite superiority of either method. In both experiments the critical ratios show a much greater improvement in voice in the experimental than in the control group.

Conclusions

1. The intelligibility test of tonal symbolism provides a practical test of achievement in the use of voice in speech instruction.

2. The recordings of a short sample of oral reading are useful in providing an index of achievement in voice usage and as a means of studying the problems of evaluating achievement in voice production.

3. The ratings of single trained but independent judges, although highly variable, are on the average higher than ratings of more generalized achievement in speech. The two methods of rating provided ratings of approximately equal reliability. The reliabilities of ratings on general effectiveness were the highest of any of the specific items on the rating scale.

4. The rating-rerating reliability of single judges was about the same as inter-rater reliability. When the ratings of four to six such judges are averaged a high reliability is obtained on rating-rerating correlations.

5. The use of a paired comparisons method of rating records of voice achievement may, although will not necessarily, reveal improvement in voice usage not recognized when a single standard of judging records of achievement is employed.

6. Voice improvement of far greater significance may be expected from a unit of concentrated instruction in voice than can be expected from incidental voice instruction in a general speech unit.

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News and Announcements

(Continued from Page 158)

Sarah Glickenhaus, formerly Senior Speech Clinician at the University of Minnesota, has left to join her husband in New York. He has just returned from his work with the Norwegian Embassy in Oslo. Mrs. Glickenhaus has been succeeded by Miss Alice Mendenhall.

Until she joined the staff of the University of Minnesota, Miss Mendenhall was at Louisiana State University. As Senior Speech Clinician, she divides her time between the campus and the Veterans' Hospital. She handles the head injury and deafened cases at the hospital.

Miss Emily Oxman, formerly Speech Clinician in the St. Paul Public Schools, is now a Junior Speech Clinician at the University of Minnesota, while working on her M.A. degree.

Miss Florence Olsen has resigned as Acting Supervisor of the Hearing Clinic at Indiana State Teachers College to accept a position on the faculty of the Central Institute for the Deaf. She will also work on her doctorate at Washington University.

Mary Wehe Huber will direct a research project in the language development of a group of infantile dysphasics in the Division of Child Development in the School of Education at the University of Wisconsin during the eight weeks summer session of 1946.

Dr. Arthur Secord of the Speech Department at Brooklyn College, will be Lecturer in Speech Reeducation at the University of Western Ontario during the 1946 summer session, which runs from July 1 to August 10.

IT'S NICE TO KNOW HOW TO READ

Consider the results when 200 pupils in grade six are given the following sentence and asked the following question about it (the sentence and questions were presented in print, and each child could read them as often as he wished, and as carefully):

> In Franklin, attendance upon school is required of every child between the ages of seven and fourteen on every day when school is in session unless the child is so ill as to be unable to go to school, or some person in his house is ill with a contagious disease, or the roads are impassable.
>
> *Question:* What is the general topic of the paragraph?
>
> *Answers:* Unanswered; Franklin; In Franklin; Franklin attendance; Franklin School; Franklin attending school; Days of Franklin; School days of Franklin; Doings at Franklin; Franklin attends to his school; It is about a boy going to Franklin; It was a great inventor; Because it is a great invention; The attendance of the children; The attendance in Franklin; School; To tell about school; About School; What the school did when the boy was ill; What the child should take; If the child is ill; How old a child should be; If the child is sick or contagious disease; Illness; On diseases; Very ill; An excuse; The roads are impassable; Even rods are impossible; A few sentences; Made of complete sentences; A sentence that made sense; A group of sentences making sense; A group of sentences; Subject and predicate; Subject; The sentence; A letter; Capital; A capital letter; To begin with a capital; The first word; A general topic; Good topic; Leave half an inch space; The heading; Period; An inch and a half; An inch and a half capital letter; The topic is civics; The answer.

Most of these children knew the meanings of the words in this paragraph and this question. As you have noted, few of the errors trace back to having wrong meanings or none for single words. Their errors are in the main caused by errors in maneuvering their mental connections. . . .

EDWARD LEE THORNDIKE, *Man and His Works* (Harvard University Press, 1943), 75-77.

Book Reviews

Ernest H. Hendrickson, Editor*

BERRIEN, F. K., *Practical Psychology*. New York: MacMillan, 1944. Pp. vii, 584.

Mr. Berrien has written a practical textbook for the student or layman not familiar with psychological literature. To survey the chief problems toward which the applied psychologist has made some contribution has been the aim of the author. This reviewer feels that he has discharged this resolution admirably. Because it covers many fields, each section cannot be as detailed as some readers might like. For instance, the last section, 'Psychology Applied to Personal Problems,' is not comprehensive, but should surely serve the purpose of steering students in the right direction. It surveys the situation and shows the application of psychology to personal problems which, after all, is the aim of the author. However, it should also serve another purpose. It should make students aware of other departments in which they can take courses that will more fully help them to resolve their personal problems.

The format of the book is good and the headings and sub-headings allow the reader to see relationships and readily organize the material for study and review. The summaries at the end of each chapter particularly appealed to this reviewer. The book is very readable with many good illustrations and examples. In each field discussed the author has drawn conclusions and presented evidence and procedures upon which these conclusions were developed. Direct quotations are limited, but ample references for each chapter are listed in the appendix. This arrangement allows the reader to substantiate or investigate the conclusions presented, keeps the book from appearing cluttered and distractions at a minimum. Also listed in the appendix is an index of names and subjects, and instructions in the simple techniques for determining central tendency, dispersion, and correlation.

The organization of the book is excellent. The nineteen chapters are divided into six parts. Part One shows the application of psychology to education. This section is especially important at the present time since many veterans are returning to our universities after being away from formal schooling for a number of years. As the author states, 'All too frequently college and university students finish twelve or more years of schooling without stumbling upon the easiest ways of achieving scholastic success.' This material should be a 'must' for all students entering our institutions of higher learning.

Part Two discusses psychology as it applies to mental health. The principles of mental hygiene and their application by teachers and parents in guidance are very good. Mr. Berrien points out that the conviction is growing 'that the best parents and teachers are not necessarily those who know the most about the physical, mental, and emotional growth of children, but those who are themselves well-adjusted and well-integrated persons.' The thesis that standards of good behavior for children are usually the opposite of those for adults and that many problems of guidance arise from the lack of 'long range objectives' is well treated by the author. The problems of the 'old' person are surveyed and suggestions given for solving them. Preparation for retirement is urged with the idea presented that in the future, not a mere accumulation of years but 'tests for retirement may be the gauge for such decisions.' In a prophetic manner it is suggested that 'it is entirely possible that society in the future may come to recognize more fully the wisdom of salvaging rather than shelving seniles.'

The application of psychology to industry is the concern of the third part of the text. Some tests are discussed along with the contributions of psychology to better employment techniques. To this reviewer it seems that a discussion of more tests or at least a bibliography of tests or sample batteries of tests would have been a worthwhile addition. Training in industry, efficiency in production, morale and rewards for work as well as a discussion of industrial and highway accidents are all treated. The point that 'man does not work for bread alone' is well illustrated. The author suggests that nonfinancial rewards 'have not been generally utilized to their full value in many establishments.'

Psychology applied to consumers and advertising is the thesis of Part Four. Controlling human behavior and human attitudes is the main problem of advertising. As such it is of great interest to the psychologist. There is a nicely developed discussion in this section of the comparatively recent introduction of consumer research and its profound influence on selling and advertising as well as on the designing,

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planning, and production departments of modern industry.

Part Five concerns itself with the application of psychology to crime. The principal factors contributing to crime are examined and the differences between the casual and the habitual offender pointed out. The environmental point of view is emphasized rather than the 'theories of inheritance of criminality through certain definable biological types.' Satisfactory statistics on the 'psychologically broken home' are not available but the suggestion is made that this type of broken home may be more productive of criminal behavior than the home actually broken by death, separation, or divorce. Individual differences in all aspects of crime and treatment of criminals is stressed. The chapter dealing with deception tests that operate on the principle that deception is revealed by significant physiological functioning of the organism is comprehensive and interesting.

Personal problems and how psychology can alleviate them is the topic of the last part of the book. This section should open new vistas for most lower division college students. It emphasizes the importance of 'self-knowledge and self-guidance' after obtaining all possible information from counselors and tests. The last chapter can do little more than serve as an introduction for a more detailed course in effective speaking and writing. Since effective speaking and writing is judged in terms of its effect on other people, a discussion of it falls within the scope of a text on applied psychology. However, to improve these skills requires participation in activities which makes one adept in certain procedures. The question arises whether the treatment of such skills in the present text is too fragmentary to be of much pragmatic value.

Practical Psychology is an attractive, readable and useful book. The author is not at all dogmatic but very eclectic, always presenting several views of the problem under discussion. The thesis throughout is that psychology is practical and can be, and at present is being, applied to many of our problems. Certain people in particular fields, for instance the mental hygiene field, may feel that the discussions are sometimes too brief. However, in such a text investigations have to be limited and it is to be expected that when sufficient interest is aroused, other more detailed courses in specific fields can be pursued. Parts One, Two, and Six should be valuable in helping college students attain a better personal adjustment. The book is very realistic and this reviewer regards it as a worthwhile contribution to our psychological literature.

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IRENE R. EWING. *Lip Reading and Hearing Aids.* Manchester England: Manchester Univ. Press, 1944. Pp. vi, 73.

After reading the little book *Lip Reading and Hearing Aids,* written in 1944 by Irene R. Ewing and published at the University of Manchester by the University Press, one has the impression that Mrs. Ewing knows 'the hard of hearing adult' and is willing to deal with the problems with which he is faced in a common sense, down to earth manner. The book is brief and to the point. The first five chapters, following the introduction, discuss lip reading as a means by which the hard of hearing adult may follow conversation directed to him. Included in these chapters are the results of three research projects carried on by Mrs. Ewing and her husband, Dr. A. W. G. Ewing. The first experiment was an attempt to obtain factual evidence of the amount of benefit which had been derived from lip reading lessons by ninety-two unselected hard of hearing adults ranging in age from seventeen to seventy-two years. The second experiment was carried on with a number of skilled lip readers to determine the percentage of consonants which can be identified by visible movements. The third was a series of tests given to a group of adults to determine how much the context of a sentence helps a lip reader to differentiate between homophenous sounds and words.

The results obtained by Dr. and Mrs. Ewing by means of the experimental method are very interesting. Such results are the first to appear in any text on lip reading known to the writer. It is a step in the right direction. One does wish, however, that the author had included in text or appendix the material used in the experiments together with a discussion of the method followed in conducting them. One would then have a basis upon which to evaluate results.

The series of lip reading lessons suggested by the author are in the briefest outline form, allowing for a wide variety of adaptation to the needs of hard of hearing individuals. It is the opinion of the writer that this type of outline in the hands of an inexperienced lip reading teacher is of much greater value than the ready prepared sentence and story material appearing in most books on the subject.

The chapter on speech for the hard of hearing adult seems to be addressed to the hard of hearing person himself. It analyzes very simply the speech problems with which he may be confronted and suggests ways that the patient may help himself to avoid or overcome them.

The chapter on hearing aids is a common sense presentation which could lead no one to feel that a hearing aid is a panacea for

all hearing ills. It does discuss the hearing aid as a usable instrument for some hard of hearing people. The emphasis placed by Mrs. Ewing upon the use of a hearing aid plus lip reading as a substitute for normal hearing seems to the writer a tenable point of view.

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CASSIRER, ERNST. *Language and myth.* Translated from the German by Susanne K. Langer. New York: Harper, 1946. Pp. 103-x.

At the time when the late Professor Cassirer was engaged in the working out of his *The Philosophy of Symbolic Forms,* he wrote a concise statement of his intriguing and significant theory of myth and language. The treatise on symbolic forms itself has not been translated into English. Besides the present book, only a recent small volume, *An Essay on Man,* is available in our language of the great work of Cassirer, generally regarded as outstanding among modern European students of language. From 1941 until his death in 1945 he served as visiting Professor of Philosophy, first at Yale and later at Columbia. Mrs. Langer, whose *Introduction to Symbolic Logic* has established her own substantial status, has performed an important service in making available to American readers Cassirer's *Language and Myth,* one of the most provocative analyses of symbolic functions to be found anywhere.

The mythical character of our common speech is shown by Cassirer to be pervasive and fundamental. The primacy of intense feeling and sharply focussed perception in the development of myth is detailed by Cassirer. 'If we would have a verbal analogue to the mythic conceptions here at issue [*mana, taboo, mulungu,* etc.], we must, apparently, go back to the most primitive level of *interjections.* The manitu of the Algonquins, the mulungu of the Bantus is used in this way—as an exclamation which indicates not so much a thing as a certain *impression,* and which is used to greet anything unusual, wonderful, marvelous, or terrifying.' Again, quoting Hetherwick, '*Mulungu* is regarded as the agent in anything mysterious. It's mulungu, is the Yao exclamation on being shown anything that is beyond the range of his understanding.'

From such amorphous feelings, complex mythologies arise through the projective and generalizing functions of language. The primitive feelings of wonderment and awe, once named (*mana, mulungu, spirit,* etc.), are projected into trees, animals, the rainbow, powerful or fearsome persons, by the process of identifying the feeling with the name and the name with the thing by which the feeling is aroused. The cry, 'Mulungu!' projects the wonderment into the thing wondered at—and so a 'momentary god' is created, eventually to become permanent and profuse because the name is permanent and its occasions many and varied. And what is called *mulungu* or *god* or *demon* is mulungu or god or demon. 'The god or daemon of vegetation lives in each individual sheaf of the harvest.'

Only by a slow and tortuous development does language free itself in some measure from these mythical bounds of identification and projection: '. . . before man thinks in terms of logical concepts, he holds his experiences by means of clear, separate, mythical images.' In Mrs. Langer's apt phrase, 'Reason is not man's primitive endowment, but his *achievement.*' And, again in Mrs. Laager's words, it is language that 'takes us from the myth-making phase of human mentality to the phase of logical thought and the conception of facts.' But this 'language that does our thinking for us' involves necessarily a symbolism that in some measure 'is bound to obscure what it seeks to reveal.' The achievement of discursive relational logic and of scientific language is precisely the freeing of our symbolic forms from their mythical origins, an achievement brought about, increasingly in recent years, by the gradual development of languages for analyzing languages—by means of which the mythical processes of identification and projection become conscious and subject to control. And so from the jungle of myth there emerges a conscious language of fact and prediction.

Every speech pathologist will find particularly in the chapters entitled 'Word Magic' and 'The Power of Metaphor' incisive analyses invaluable to him in his attempts to achieve an understanding of the complexities of language behavior. Cassirer's treatment of these problems illuminates very considerably not only the aphasias, but also the equally perplexing disorders of language which give rise to the welter of confusions and misunderstandings by which people generally manage to surround themselves. Even such a basic clinical activity as interviewing should be appreciated with keener subtlety as a result of a slow reflective reading of *Language and Myth,* especially the two chapters on word magic and metaphor.

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Abstracts of Current Articles

Mary Huber, Editor*

BRYNGELSON, B. A prelude to General Semantics. *Southern Speech J.*, 1944, **11**, 3-7.

Although the author believes in the therapeutic value of general semantics as a means of helping people to live more sanely in the world on a 'cortical basis', he stresses the need for greater 'emotional maturity' among people before the principles of general semantics can be properly applied to practical living.

The discussion centers around the causes of emotional immaturity; a suggested therapy for emotional growth as a prerequisite for the application of general semantics is also included. (*Leonard Finlan, New York University.*)

CARHART, R. A practical approach to the selection of hearing aids. *Trans. Amer. Acad. Ophthalmol., Otoloryngol.*, 1946, 123-131.

The selection of hearing aids should be under the medical supervision and preferably with the aid of otolaryngologists. The current methodologies employed by the Army Rehabilitation Centers are still too time-consuming for the practicing physician to adopt. In fact, the medical profession is desirous of applying medical prerogatives to the selection of hearing aids in order that patients will get instruments which give adequate service and are not dangerous to use.

This plan is an adaptation to the problems of the practicing otolaryngologist of experience at one of the aural rehabilitation centers. It is not applicable to persons suffering from congenital losses or losses in infancy, but is useful to most adults and some children. Except in special cases, these criteria delimit the standards of acceptability for a hearing aid. The aid should have adequate sensitivity and gain; the instrument should have an adequate 'ceiling'; it should perform efficiently in the presence of background noise; it should permit satisfactory sound discrimination and should not present 'special problems' to the patient. The patient should firmly believe that the selected instrument is satisfactory. The hearing aid should be that of a reputable company which provides continuous service and efficient repair.

The method for selecting hearing aids is not a laboratory procedure; the stage one screen eliminates all instruments not to be given serious consideration. During the second screen the type of instruments are selected by the otolaryngologist with reference to the type of deafness, the prognosis of the condition, the recommended ear; the patient receives a battery of tests and the field is narrowed to a few instruments. During the final stage, the patient wears the instruments in practical speech situations, discovering for himself which one gives maximum satisfaction and making the final selection himself. (*Alice Mendenhall, Minnesota.*)

CARLSON, J. J., DESPERT, J. L., KOPP, H., and KRUGMAN, M. Psychosomatic study of fifty stuttering children. *Round Table, Amer. J. Orthopsychiat.*, 1946, **16**, 100-133.

(1) Social, physical, and psychiatric findings. Fifty children (41 boys, 9 girls), ages 6½ to 15 years, of normal intelligence, free from physical handicap or acute illness, and not under psychiatric treatment for speech defect, were selected from the speech improvement classes of New York City schools. Physicians, social workers, and psychologists investigated the subjects by means of dynamic family histories, with emphasis on the areas of familial diseases, personality characteristics, psychotic and neurotic illnesses, handedness, and speech, as well as various phases of developmental adjustment in the subjects' early years; physical examinations; motor tests (Ozeretzky); psychometric and Rorschach tests; preliminary psychiatric investigation. The results showed a common occurrence of anxiety, primary, not secondary to the speech difficulty, in hereditary background; somatic selectivity for upper respiratory and upper digestive tracts, and cardiovascular diseases, and a higher frequency of neurotic and speech disturbances in the direct antecedent than would be the case with normal children. No specific personality type could be said to be characteristic, but obsessive compulsive traits predominated and sadistic fantasies were common.

(2) Ozeretzky tests (standardized on 5000 Russian Children). The Ozeretzky tests for (1) static coordination, (2) dynamic coordination of hands, (3) general dynamic coordination, (4) speed, (5) associated movements, and (6) synkinetic movements, were given to the 50 subjects by a trained examiner. The findings indi-

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cated that 20 per cent showed motor deficiency (retardation of 1½ to 3 years); 26 per cent showed severe retardation (3 to 5 years retardation), 46 per cent were classified as 'motor idiots' (more than 5 years retardation). Only 3 of the 50 stutterers showed normal motor development, and one a superior motor level.

(3) Analysis of responses on the revised Stanford-Binet. Comparisons between the 50 stutterers and a matched group of problem children referred to the Bureau of Child Guidance on the intelligence test administered revealed that although the stutterers were not inferior to the problem children in general verbal ability, and as a group were better readers and had made better progress in the grades, they were not functioning up to their full potentialities; the stutterers were markedly inferior in handling non-verbal material, especially that involving visual perception and motor coordination. Further trends were noted which were not statistically significant.

(4) Rorschach study. The stutterers' performance on the Rorschach was contrasted with that of a matched group of problem children. Many details of diagnosis by five psychologists who participated in the study are described. The following conclusion was made on the basis of the data: 'stuttering is closely associated with emotional and personality maladjustment, frequently manifested by obsessive-compulsive traits or obsessional neurosis.' (*Katherine F. Thorn, Minnesota.*)

EHRENWALD, H. J. The starcross reading board: a dynamic aid to reading. *J. ment. Science (Brit. J. Psychiat.)*, 1945, **91**, 385.

This article describes the construction and operation of the Starcross Reading Board and makes prediction of its use to encourage the motor aspect of reading skill in backward readers. The Reading Board is a cardboard or plywood sheet, 14 by 11 inches with rows of slots cut horizontally so that a rod carrying a disc can be slid along the slots at any desired rate. The disc carries an object, picture, or word card on which the child focusses attention and by following the movement along the slots, correct eye movements for reading are established.

Use of the Starcross Reading Board has been of too short a time to fully evaluate its therapeutic worth, but users of it have found that it stimulates interest and visual attention that should be very helpful in dealing with retarded reading problems. (*Lee Hedgecock, Minnesota.*)

FOWLER, E. P. The value of individual hearing aids for hard of hearing children in public schools. Report to the sub-committee of the committee on problems of deafness of the National Research Council. Otological examination and follow-up. *Laryngoscope*, 1946, **56**, 1.

This is a report on a study of 26 pairs of hard of hearing children who were matched psychologically and behaviorally and as to degree of hearing loss. One child of each pair was provided with a hearing aid and the other constituted part of the control group. Hearing was retested at least once a year over a period of three years. The percentage of capacity for hearing speech was used as hearing index and the effect of wearing an aid was measured by Stanford Achievement Tests, aspects of Personality and Pupil Portrait scales.

The findings showed no statistically reliable difference with respect to achievement, but did indicate a trend toward improvement in social and school adjustment. The experimenters feel that the hearing aids should be worn from the very beginning of school life and that there should be an emphasis on teaching children to use hearing aid to best advantage. (*Lee Hedgecock, Minnesota.*)

Foreign Letters, London, from the Regular Correspondent, *J. A. M. A.*, 1945, 680.

A College of Speech Therapists has been formed in London. At the inaugural ceremonies, Mr. Zachary Cope, president of the Board of Registration of Medical Auxiliaries, pointed out that none of the universities has a professor or lecturer in speech therapy. As an examiner in surgery he said he had known many candidates who might have failed owing to a speech defect but for an effort at understanding by the examiner. Mr. Cope advised having a speech therapist at all major hospitals. Outside of London there are only 25 hospitals which have a speech therapist. The new speech institution has between 200 and 300 members. (*Loretta Wagner Smith, Brooklyn College.*)

FROMM, ERIKA O. Study of a case of pseudo-deaf muteness. *J. nerv. ment. Dis.*, 1946, **103**, 37-39.

This patient was studied for over 16 months at the psychiatric clinic of the University of Amsterdam, Holland. The patient, 10 years old at the time, and suffering from congenital osteogensis imperfecta, had neither spoken nor reacted to acoustical stimuli since the age of two and a half, when he had contracted otitis media in both ears. Previous to this, his language had been normal for his age.

Examination showed the boy's deafness to be neither organic nor functional. Aphasia likewise was ruled out. His score on the Hederscher Deaf Mute Intelligence Test

was 100. Galvanometric findings proved that the boy did not in any way perceive sounds made by objects he feared or sounds made when he was receiving non-acoustical stimuli at the same time. It was, however, possible for the patient to hear when the acoustical stimuli was a source for play which had been made meaningful by previous optical stimpulation. The author proposes to call this type of deafness psychic deafness.

Systematic teaching of speech was given after the patient proved himself able to learn a few words such as *candy, ball* and *book*. (*Tamara Pollack, Northwestern.*)

GREENFIELD, S. D. An evaluation of the Lempert Fenestra Nov-ovalis operation in the treatment of otosclerosis. *Arch. Otolaryngol.*, 1946, **43**, 25-30.

Otologists, knowing the pathology underlying otosclerosis with its progressive manifestations, precluded the advisability of operative measures to retard its progress. Nevertheless, the fenestration operation has won many advocates during the past few years. Formerly, infection of the cerebrospinal system occurred in injuries of the labyrinth during operations in the presence of acute and chronic infections of the temporal bone. Now otologists are convinced that opening the perilymph spaces in the absence of acute infection is not followed by any such complications.

Many otologists are still unwilling to advise the fenestration operation for they still cling to therapy not involving surgery.

This operation is the only treatment for the restoration of serviceable hearing in patients with otosclerosis. If the operation is performed by a competent surgeon, it is a safe surgical measure. In general, the persons most suitable for this operation are those with a pure conduction deafness without any nerve involvements. (*Alice Mendenhall, Minnesota.*)

HELTMAN, H. J. Remedial training for speech deviates in the elementary school. *Elem. Sch. J.*, 1946, 283-287.

Attention is drawn to the importance of trying to discover the cause of speech hesitancy and also of differentiating between the symptoms of stuttering and speech peculiarities which have an entirely different basis. Reference is made to the University of Iowa studies which warn against the danger of treating certain phenomena of speech in children as if they were true stuttering. Two symptoms of stuttering which distinguish it from all other speech irregularities involving a lack of customary fluency are given. (1) Anxiety lest the speaker will hesitate and repeat and, concurrent with that anxiety, (2) a spasm of the organs of speech, particularly the muscles controlling breathing.

Robert West's study indicating that the highest frequency of stuttering occurs in Grades IV, V, and VI is alluded to.

As a basic principle for all speech education the author suggests that the developing speech of the child should be so directed that he never comes to look on the act of speaking as an unpleasant experience. Some useful techniques are given for providing pleasant, easy speaking experiences for children. A few suggestions to the teacher for adapting classroom situations to the needs of the stuttering child are offered. The author indicates that it is not the responsibility of the elementary school teachers to try to 'cure' stuttering. Probably they should not even attempt it, but every teacher who will take an enlightened interest in the alleviation of the disorder can give her pupils the best possible chance to overcome it. (*Arthur Secord, Brooklyn College.*)

KARLIN, I. W. Stuttering. *Arch. Pediat.*, 1946, **63**, 27-31.

Dr. Karlin, in this article, defines stuttering as a disturbance in the rhythm of speech, characterized by intermittent spasmodic blocking or repetition of sounds or words. He believes stuttering is of special interest to the pediatrician since it usually has its onset in early childhood, and since the treatment should begin as early as possible.

Although stress is placed on a psychosomatic theory of stuttering, the author comments on organic and biochemical theories, as well as electroencephalographic and laterality studies, and their relationship to this speech disorder.

A few suggestions for the treatment of the stutterer are included, and the reader is provided with a bibliography for a more detailed treatment. (*Leonard Finlan, New York University.*)

KAUFMAN, I. A treatise on harelip and cleft palate. *Amer. J. Orthodont., oral Surg.*, 1946, **32**, 47-51.

The author presents a brief description of the etiology of cleft palate as well as the prognosis, treatment and operation for cleft of the lips, alveolar process, soft palate and hard palate. He includes short explanations of these three operations for the cleft in the hard palate by Ferguson, Lagenbeck and Brophy. (*Katherine F. Thorn, Minnesota.*)